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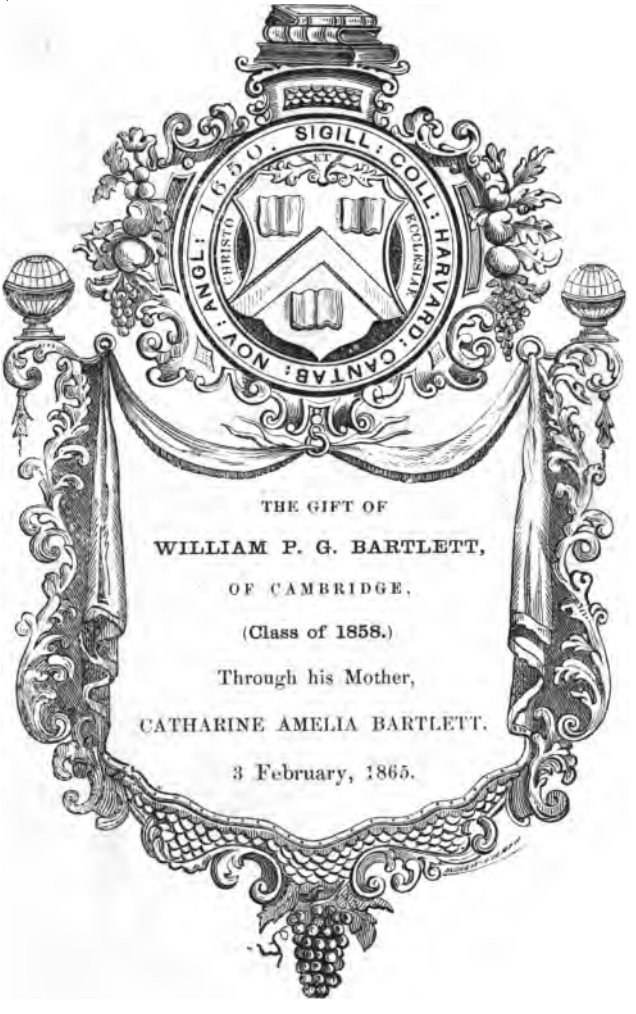

THE GIFT OF

WILLIAM P. G. BARTLETT,

OF CAMBRIDGE,

(Class of 1858.)

Through his Mother,

CATHARINE AMELIA BARTLETT.

3 February, 1865.

TRANSFERRED TO
CABOT SC

MATHEMATICAL TABLES;

COMPRISING

LOGARITHMS OF NUMBERS,

LOGARITHMIC SINES, TANGENTS, AND SECANTS,

NATURAL SINES, MERIDIONAL PARTS,

DIFFERENCE OF LATITUDE AND DEPARTURE,

ASTRONOMICAL REFRACTIONS, &c.

By

Solomon P. Miller and T. Sherwin

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ADVERTISEMENT.

THE Tables, comprised in this volume, have been very carefully compared with the best English and French Tables; and they will be found, it is believed, not inferior, in point of correctness, to any similar Tables in use.

Prefixed is a short introduction, explanatory chiefly of the methods of using them.

For information respecting the theory and construction of logarithms, the student is referred to LACROIX'S ALGEBRA, (Cambridge translation,) to SMYTH'S ALGEBRA, and to the more extended English and French treatises.

S. P. MILES,
T. SHERWIN.

BOSTON, January, 1836.

Having had occasion to make a slight examination of these tables in under signed are [illegible] to testify that they are less accurate than most similar Tables in use.

J. M. Price
C. S. Spence

INTRODUCTION.

Of Logarithms.

The logarithms of numbers are the exponents of the different powers to which a constant number must be raised, in order to be equal to those numbers; the principles, therefore, which apply to exponents in general, apply to logarithms. Hence, *to multiply numbers, add their logarithms; to divide, subtract the logarithm of the divisor from that of the dividend; to raise a number to any power, multiply its logarithm by the exponent of that power; and, to extract the root of a number to any degree, divide its logarithm by the number which denotes the degree of that root.*

The constant number upon which the tables in common use are constructed, and which is called the *base* of the tables, is 10. The logarithm of 1 or 10^0, is 0; that of 10 or 10^1, is 1; that of 100 or 10^2, 2; that of 1000 or 10^3, 3, &c.; also, the logarithm of .1 or 10^{-1}, is -1; that of .01 or 10^{-2}, -2; that of .001 or 10^{-3}, -3, &c.: hence, the logarithms of the intermediate numbers, will consist of whole numbers and fractions, or of fractions only, if the number be greater than 1 and less than 10.

The whole number is called the *characteristic* or *index* of the logarithm; and, if positive, is always less by one than the number of places of integers in the corresponding number; but if negative, it is equal to the number of places by which the first significant figure of its corresponding decimal is removed from the place of units; or, universally, *the characteristic of a logarithm marks the place of the first significant figure of its corresponding number from the place of units.* It is evident, moreover, that, as the logarithms of numbers, which are tenfold, the one of the other, do not differ except in their characteristics, it is sufficient that the tables contain the fractional parts only of the logarithms. There is, indeed, a decided advantage in excluding the characteristic; since, for example, the logarithm of 20, which equals 1. 3010300, (the fractional parts of the logarithms being always expressed in the tables by decimals,) becomes, by increasing its characteristic successively by 1, that of 200, 2000, 20000, &c.; or by diminishing its characteristic in a similar manner, that of 2, .2, .02, .002, &c.

To Find the Logarithm of a Number.

1. If the given number be entire, and less than 100, find it in one of the columns, marked No. in the small table of the logarithms of numbers, and directly on the right will be found its logarithm; thus, the logarithm of 67 is 1.8260748.

2. If the number consist of three figures, whether entire, mixed, or decimal, find these figures in the first column of the larger table, and in the next column on the right will be found the decimal part of its logarithm, to which prefix the proper characteristic. If the number consist of four

figures, find the first three in the first column, and the fourth at the top, and the corresponding logarithm, with the exception of the characteristic, will be found on a line with the first three, and directly below the last. Thus, the logarithm of 4783 is 3.6797004. That of 5159 is 3.7125655.

3. If the given number contain five or more places, its logarithm may be found in the following manner. Suppose the logarithm of 698262 be required. First, find the logarithm of 698200 = 5.8439798, which does not differ from that of 6982, except in the characteristic; then find the logarithm of 698300 = 5.8440420. The former is evidently less, and the latter greater, than the logarithm of 698262. The difference of the numbers 698200 and 698300, is 100, and the difference of their logarithms, found in the column marked Dif. is .0000622; the difference of the numbers 698200 and 698262, is 62: wherefore, if for an increase of the number by 100, the logarithm increase by .0000622, for an increase of the number by 62, the logarithm ought to be increased by $\frac{62}{100}$ of .0000622 = .0000386; this, added to the logarithm of 698200, gives 5.8440184, the logarithm required.* In like manner, the logarithm of 8734683 is that of 8734000, increased by $\frac{683}{1000}$ of the difference between the logarithms of 8734000 and 8735000.

This process of finding the logarithms of large numbers supposes that they increase in the same ratio as their numbers, which is not strictly true, though sufficiently near the truth for general practice. It may be remarked, however, that these ratios approach that of equality, the larger the numbers, and the less they differ from each other.

4. If the given number be a fraction, since a fraction represents the division of the numerator by the denominator, its logarithm will be found by subtracting the logarithm of the denominator from that of the numerator. But the logarithm of 1 being 0, that of a fraction less than unity, will be negative. Thus, the logarithm of $\frac{2}{3}$ = 0.3010300 — 0.4771213 = —0.1760913: or the characteristic only may be made negative by adding to the logarithm of the numerator — 1 + 1, —2 + 2, &c. (which does not alter its value,) and then subtracting from the positive part the logarithm of the denominator. By this method, the logarithm of $\frac{2}{3}$ = — 1 + 1.3010300 — 0.4771213 = — 1.+ 8239087; or, as it is usually written, $\bar{1}$.8239087, the sign — being placed over the characteristic; and this expression reduced, will be the same as that first obtained.

But the logarithm of a fraction is susceptible of a different and more convenient form. If to the logarithm $\bar{1}$.8239087 we add 10, (or, which amounts to the same thing, add 10 to that of the numerator, previously to subtraction,) it becomes 9.8239087. Now this form is perfectly convenient for use, and will produce no confusion, if we recollect that this logarithm is too great by 10.

To apply this method to decimal fractions, observe, for example, that the logarithm of .2 = $\bar{1}$.3010300; that of .02 = $\bar{2}$.3010300; that of .002 = $\bar{3}$.3010300, &c.; then, increasing the characteristics, each by

* As the differences in the column of differences do not always correspond exactly to those of all the successive logarithms in the line against which they are placed; when great accuracy is required, it may be necessary, particularly in the first part of the table, to take the actual difference between the two successive tabular logarithms.

10, we have the logarithm of .2 = 9.3010300; that of .02 = 8.3010300; that of .002 = 7.3010300. Hence, the logarithm of a decimal fraction does not differ from that of a whole number consisting of the same figures, except in its characteristic, which, in this form, is always 10, wanting as many units as are equal to the number of places by which the first significant figure of the decimal is removed from the decimal point. But it must be recollected that these logarithms are each too great by 10; and, consequently that in those operations in which they may have been used, if the resulting logarithm contain tens, these tens must be discarded. Suppose, for example, it were required to raise .2 to the second power. The logarithm of .2 = 9.3010300; this multiplied by 2 gives 18.6020600; from which if 10 be subtracted, we have 8.6020600, the logarithm of .04.

5. *Having a logarithm, to find its corresponding number.* Look in the table for the decimal part of the logarithm, and against it in the column marked No. will be found the first three, and, directly above it in the upper space, the fourth figure, of the number required, the order of units being determined by the characteristic. Suppose the given logarithm 3.3332457; the corresponding number is 2154. Had the characteristic been 5, the number would have been 215400. Had it been $\overline{2}$, or 8, (10 having been added,) the number would have been .02154.

6. If the decimal part of the logarithm be not found exactly in the table, the method of obtaining the number will be the reverse of that in Art. 3.

Suppose the given logarithm is 5.7343003; the next less logarithm, corresponding to the number 542300, is 5.7342396; the next greater logarithm, corresponding to the number 542400, is 5.7343197. The difference of these logarithms is .0000801, and the difference of their corresponding numbers 100; the difference between the less logarithm and that given, is .0000607; wherefore $\frac{607}{801}$ of 100 = 75.78 is to be added to 542300, which gives 542375.78, the number required.

7. If a logarithm be wholly negative, or with a negative characteristic only, its corresponding number is a fraction; 10 therefore is to be added, then the difference between the positive and negative parts taken, and the remainder is the logarithm of the number required.

Suppose the given logarithm —0.8440570. Add 10 and reduce, and the log. becomes 9.1559430, the number corresponding to which is .1432.

8. *Arithmetical Complement.* Suppose it were required to divide 75 by 15; the result would evidently be the same if 75 were multiplied by $\frac{1}{15}$; instead, therefore, of subtracting the logarithm of 15 from that of 75, we may add to the latter the logarithm of $\frac{1}{15}$. The logarithm of $\frac{1}{15}$ = log. of 1 — log. of 15; but the logarithm of 1, being 0, may be expressed by $-1+1, -2+2$, &c. or, as is usually done for the sake of uniformity, by $-10+10$; and in the operation, the —10, provided we subtract 10 afterwards, may be omitted. This logarithm is called the *arithmetical complement* of the logarithm of 15. *The arithmetical complement of the logarithm of a number is therefore found by subtracting the logarithm of that number from* 10.

The logarithm of 15 = 1.1760913, which subtracted from 10, leaves

8.8239087, the arithmetical complement of the logarithm of 15; this added to the logarithm of 75 = 1.8750613, gives 10.6989700; subtract 10, and the remainder is 0.6989700, the logarithm of 5. It will readily be perceived from the foregoing example, that when a question involves several multiplications and divisions, the whole may be performed by the addition of logarithms.

Table of Logarithmic Sines, &c.

This table contains the logarithms of those numbers which express the values of the sines, tangents, &c., to degrees and minutes, radius being considered 10 000 000 000, the logarithm of which is 10.

It may readily be adapted to the radius equal to unity, by subtracting 10 from each characteristic. By this change, the logarithms obtain the same values that they have in the systems of trigonometry, in which the sines, &c. are defined to be the ratios between the sides of a right-angled triangle. It is advisable, however, even in this case, to allow the logarithms to remain as they are when the characteristics are less than 10, for the reasons already given in regard to the logarithms of fractions.

It is to be observed that any angle and its supplement, or what it wants of 180°, have the same sine, tangent, &c., and that the sine, tangent, and secant of any angle are the same respectively as the cosine, cotangent, and cosecant of its complement, or what it wants of 90°. Thus the sine of 24° = sine of 156° = cosine of 66° = cosine of 114°.

1. *To obtain the logarithmic sine, tangent, &c. of an arc or angle containing degrees and minutes.* If the number of degrees be less than 45 or greater than 135, find the degrees and name, *sine*, *cosine*, &c., at the top of the page, and the minutes in the column of minutes directly below the degrees; but if the number of degrees be greater than 45 and less than 135, find the degrees and name at the bottom, and the minutes in the column of minutes directly above the degrees; then on a line with the minutes, and below or above the name, as the case may be, will be found the logarithmic sine, cosine, &c., required. For example, the sine of 25° 33′ = 9.6347780; the tangent of 146° 35′ = 9.8194096.

2. If the given angle contain degrees, minutes, and seconds, take fractional parts of the difference, found in the column of differences, as was done in finding the logarithms of large numbers, and add these fractional parts to the logarithmic sine, &c., corresponding to the degrees and minutes only, or subtract them from it; adding when the logarithmic sines, &c., increase as the angles increase, and subtracting when they diminish as the angles increase. To find, for example, the sine of 15° 12′ 13″. The logarithmic sine of 15° 12′ = 9.4186148. To this add $\frac{13}{60}$ of .0004647 = .0001007, which gives 9.4187155, the sine of the angle required.

To obtain the cosine of 31° 16′ 12″. The cosine of 31° 16′ = 9.9318447. From this subtract $\frac{12}{60} = \frac{1}{5}$ of .0000768, which gives 9.9318293, the cosine required.

3. *To obtain the degrees, minutes, and seconds, corresponding to any given logarithmic sine, cosine, &c.* If the logarithmic sine, &c. be found exactly in the table, the degrees will be seen at the top or the bottom,

according as the denomination sine, &c., is found at the top or the bottom, and the minutes in the column of minutes, directly below or above the degrees, and on a line with the given sine, &c. Thus, let the log. sine be 9.8345948; the corresponding angle will be 43° 6′, or its supplement 136° 54′.

If the logarithmic sine, &c., be not contained exactly in the table, find the next greater and the next less, and observe the difference between them in the column of differences; then take the difference between the given logarithmic sine, &c., and that which corresponds to the less number of degrees and minutes; make the former of these differences the denominator, and the latter the numerator of a fraction; this fraction will express the part of 1′ or 60″, which is to be added to the less number of degrees and minutes. Given the logarithmic sine = 9.4593734. The next less, corresponding to 16° 44′ is 9.4592684; the next greater, corresponding to 16° 45′, is 9.4596884; their difference, .0004200. The difference between the given sine and that of 16° 44′, is .0001050; consequently $\frac{1050}{4200} = \frac{1}{4}$ of 60″ = 15″, added to 16° 44′, gives 16° 44′ 15″, the angle required.

On the first page of the tables will be found a table of logarithmic sines, &c., to the points and quarter points of the compass, the use of which is in all respects the same as that of the table just described.

Table of Natural Sines.

This table contains the numerical values of the sines and cosines to every degree and minute of the quadrant, expressed in decimals, radius being considered equal to unity. It is evident that these values may be adapted to any other radius. For instance, if radius be supposed equal to 10 000 000, these values will be integers. The method of finding the sine or cosine corresponding to any given number of degrees, minutes, and seconds, and the reverse, in this table, is similar to that given for finding logarithmic sines, &c., except that if the angle exceed 90°, we first find its supplement, and then the sine or cosine of this supplement.

It is to be observed, however, that if the denomination and degrees are found at the top of the page, the minutes must be sought in the column on the left; if at the bottom, in the column on the right.

Example 1. Sine of 19° 25′ = .3324355.

" 2. Sine of 159° 30′ = sine 20° 30′ = .3502074.

Table of Difference of Latitude and Departure, or Traverse Table.

This table contains the difference of latitude and departure, to points, quarter points, and degrees of the quadrant; and though concise, furnishes results equally accurate with those obtained from more extended tables.

The distances, from 1 to 10, will be seen at the top and bottom of the table, and, when necessary, they may be considered as tens, hundreds, thousands, &c.; in which case the corresponding difference of latitude and departure are to be increased in the same ratio. Moreover, if the

course be found on the left, the denominations, Lat. and Dep., are to be sought at the top of the page; if on the right, they are to be sought at the bottom; then, on a line with the course, and directly below or above the distance, will be found the corresponding difference of latitude and departure.

Examples. 1. Let the course be 34°, and distance 9; the corresponding dif. lat. is 7.4613, and dep. 5.0327.

2. Let the given distance be 3256, and course 31°.

The dif. lat. for	3000 =	2571.5	Dep.	1545.1
" " " "	200 =	171.43	"	103.01
" " " "	50 =	42.858	"	25.752
" " " "	6 =	5.1430	"	3.0902
Dif. lat. required,		2790.9310.	Dep.	1676.9522.

It is to be observed that when the given distance, as in the last example, consists of units of different orders, the difference of latitude, or departure required, is the sum of the differences of latitude, or departures, corresponding to the several parts of this distance.

Table of Meridional Parts.

This table contains, in geographical miles, the values of meridional arcs, to degrees and minutes, according to the principles of Mercator's chart. The method of using it will be sufficiently illustrated by the following examples.

1. Required the meridional parts for 12° 15′. Look for the degrees at the top or bottom of the page, and the minutes in the column on the right or left, and below or above the former, and opposite the latter, will be found 741, the meridional parts required.

2. Required the meridional difference of latitude between Washington, in latitude 38° 53′ N., and Boston, in latitude 42° 23′ N.

Latitude of Boston 42° 23′.	Meridional parts 2813
Latitude of Washington 38° 53′.	Meridional parts 2536
Meridional difference of latitude	277.

3. Required the meridional difference of latitude between New York, in latitude 40° 42′ N., and Buenos Ayres, in latitude 34° 37′ S.

Latitude of New York, 40° 42′ N.	Meridional parts 2678
Latitude of Buenos Ayres, 34° 37′ S.	Meridional parts 2216
Meridional difference of latitude	4894.

It is to be observed that when the two places are on the same side of the equator, the meridional difference of latitude is equal to the difference of the meridional parts corresponding to the latitudes; but, when the places are on opposite sides of the equator, that it is equal to the sum of these parts.

Table of Mean Astronomical Refractions, and the Sun's Parallax.

This table contains refractions for every degree of altitude or zenith distance, when the barometer is at 30 inches, and Fahrenheit's thermometer at 55°, or when the barometer is at 29.6, and thermometer at 50°; with the corresponding variations for $\frac{1}{10}$ of an inch in the barometer, and 20 degrees of the thermometer. Its use will be readily understood from an example, if it be recollected that refraction is increased by cold and greater density, and diminished by heat and greater rarity.

Let the refraction be required for the apparent altitude 50°, when the barometer is at 30.2 inches, and the thermometer at 60°. The mean refraction for the altitude 50° is 0′ 48.1″; the variation for $\frac{1}{10}$ inch of the barometer, is 1.4″, $\frac{2}{3}$ of which is 0.3″; this, as the barometer is above 30 inches, is to be added to the mean refraction; the variation for 20° of the thermometer is 2.2″; for 5°, therefore, it is 0.55″, which, as the thermometer is higher than 55°, is to be subtracted; consequently, 0′ 48.1″ + 0.3″ — 0.55″ = 0′ 47.85″, the refraction required.

Connected with the table above described, will be seen the sun's parallax; and on the first page of the tables, a table of the miles and parts of a mile in a degree of longitude, at every degree of latitude; the use of these will be sufficiently manifest without explanation.

LOGARITHMIC SINES, &c. TO EVERY POINT AND QUARTER POINT OF THE COMPASS.

Points	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	Points
0	Inf. Neg.	10.0000000	Inf. Neg.	Infinite.	10.0000000	Infinite.	8
0¼	8.6907955	9.9994766	8.6913189	11.3086811	10.0005234	11.3092045	7¾
0½	8.9913020	9.9979037	8.9933983	11.0066017	10.0020963	11.0086980	7½
0¾	9.1665203	9.9952738	9.1712465	10.8287535	10.0047262	10.8334797	7¼
1	9.2902357	9.9915739	9.2986618	10.7013382	10.0084261	10.7097643	7
1¼	9.3855708	9.9867857	9.3987851	10.6012149	10.0132143	10.6144292	6¾
1½	9.4628241	9.9808849	9.4819393	10.5180607	10.0191151	10.5371759	6½
1¾	9.5274879	9.9738407	9.5536473	10.4463527	10.0261593	10.4725121	6¼
2	9.5828397	9.9656153	9.6172243	10.3827757	10.0343847	10.4171603	6
2¼	9.6309921	9.9561633	9.6748288	10.3251712	10.0438367	10.3690079	5¾
2½	9.6733866	9.9454298	9.7279568	10.2720432	10.0545702	10.3266134	5½
2¾	9.7110499	9.9333499	9.7777000	10.2223000	10.0666501	10.2889501	5¼
3	9.7447390	9.9198464	9.8248926	10.1751074	10.0801536	10.2552610	5
3¼	9.7750271	9.9048278	9.8701993	10.1298007	10.0951722	10.2249729	4¾
3½	9.8023586	9.8881854	9.9141732	10.0858268	10.1118146	10.1976414	4½
3¾	9.8270841	9.8697896	9.9572946	10.0427054	10.1302104	10.1729159	4¼
4	9.8494850	9.8494850	10.0000000	10.0000000	10.1505150	10.1505150	4
Points	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	Points

THE MILES AND PARTS OF A MILE IN A DEGREE OF LONGITUDE AT EVERY DEGREE OF LATITUDE.

D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.
1	59.99	14	58.22	27	53.46	40	45.96	53	36.11	66	24.40	79	11.45
2	59.96	15	57.95	28	52.98	41	45.28	54	35.27	67	23.44	80	10.42
3	59.92	16	57.68	29	52.48	42	44.59	55	34.41	68	22.48	81	9.39
4	59.85	17	57.38	30	51.96	43	43.88	56	33.55	69	21.50	82	8.35
5	59.77	18	57.06	31	51.43	44	43.16	57	32.68	70	20.52	83	7.31
6	59.67	19	56.73	32	50.88	45	42.43	58	31.80	71	19.53	84	6.27
7	59.55	20	56.38	33	50.32	46	41.68	59	30.90	72	18.54	85	5.23
8	59.42	21	56.01	34	49.74	47	40.92	60	30.00	73	17.54	86	4.19
9	59.26	22	55.63	35	49.15	48	40.15	61	29.09	74	16.54	87	3.14
10	59.09	23	55.23	36	48.54	49	39.36	62	28.17	75	15.53	88	2.09
11	58.90	24	54.81	37	47.92	50	38.57	63	27.24	76	14.52	89	1.05
12	58.69	25	54.38	38	47.28	51	37.76	64	26.30	77	13.50	90	0.00
13	58.46	26	53.93	39	46.63	52	36.94	65	25.36	78	12.47		

LOGARITHMS OF NUMBERS, FROM 1 TO 100.

No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.
1	0.0000000	21	1.3222193	41	1.6127839	61	1.7853298	81	1.9084850
2	0.3010300	22	1.3424227	42	1.6232493	62	1.7923917	82	1.9138139
3	0.4771213	23	1.3617278	43	1.6334685	63	1.7993405	83	1.9190781
4	0.6020600	24	1.3802112	44	1.6434527	64	1.8061800	84	1.9242793
5	0.6989700	25	1.3979400	45	1.6532125	65	1.8129134	85	1.9294189
6	0.7781513	26	1.4149733	46	1.6627578	66	1.8195439	86	1.9344985
7	0.8450980	27	1.4313638	47	1.6720979	67	1.8260748	87	1.9395193
8	0.9030900	28	1.4471580	48	1.6812412	68	1.8325089	88	1.9444827
9	0.9542425	29	1.4623980	49	1.6901961	69	1.8388491	89	1.9493900
10	1.0000000	30	1.4771213	50	1.6989700	70	1.8450980	90	1.9542425
11	1.0413927	31	1.4913617	51	1.7075702	71	1.8512583	91	1.9590414
12	1.0791812	32	1.5051500	52	1.7160033	72	1.8573325	92	1.9637878
13	1.1139434	33	1.5185139	53	1.7242759	73	1.8633229	93	1.9684829
14	1.1461280	34	1.5314789	54	1.7323938	74	1.8692317	94	1.9731279
15	1.1760913	35	1.5440680	55	1.7403627	75	1.8750613	95	1.9777236
16	1.2041200	36	1.5563025	56	1.7481880	76	1.8808136	96	1.9822712
17	1.2304489	37	1.5682017	57	1.7558749	77	1.8864907	97	1.9867717
18	1.2552725	38	1.5797836	58	1.7634280	78	1.8920946	98	1.9912261
19	1.2787536	39	1.5910646	59	1.7708520	79	1.8976271	99	1.9956352
20	1.3010300	40	1.6020600	60	1.7781513	80	1.9030900	100	2.0000000

LOGARITHMS OF NUMBERS, FROM 1 TO 10,000.

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101	0043214	0047512	0051805	0056094	0060380	0064660	0068937	0073210	0077478	0081742	4280
102	0086002	0090257	0094509	0098756	0103000	0107239	0111474	0115704	0119931	0124154	4239
103	0128372	0132587	0136797	0141003	0145205	0149403	0153598	0157788	0161974	0166155	4198
104	0170333	0174507	0178677	0182843	0187005	0191163	0195317	0199467	0203613	0207755	4158
105	0211893	0216027	0220157	0224284	0228406	0232525	0236639	0240750	0244857	0248960	4119
106	0253059	0257154	0261245	0265333	0269416	0273496	0277572	0281644	0285713	0289777	4080
107	0293838	0297895	0301948	0305997	0310043	0314085	0318123	0322157	0326188	0330214	4042
108	0334238	0338257	0342273	0346285	0350293	0354297	0358298	0362295	0366289	0370279	4004
109	0374265	0378248	0382226	0386202	0390173	0394141	0398106	0402066	0406023	0409977	3968
110	0413927	0417873	0421816	0425755	0429691	0433623	0437551	0441476	0445398	0449315	3932
111	0453230	0457141	0461048	0464952	0468852	0472749	0476642	0480532	0484418	0488301	3897
112	0492180	0496056	0499929	0503798	0507663	0511525	0515384	0519239	0523091	0526939	3862
113	0530784	0534626	0538464	0542299	0546131	0549959	0553783	0557605	0561423	0565237	3828
114	0569049	0572856	0576661	0580462	0584260	0588055	0591846	0595634	0599419	0603200	3795
115	0606978	0610753	0614525	0618293	0622058	0625820	0629578	0633334	0637086	0640834	3762
116	0644580	0648322	0652061	0655797	0659530	0663259	0666986	0670709	0674428	0678145	3729
117	0681859	0685569	0689276	0692980	0696681	0700379	0704073	0707765	0711453	0715138	3698
118	0718820	0722499	0726175	0729847	0733517	0737184	0740847	0744507	0748164	0751819	3667
119	0755470	0759118	0762763	0766404	0770043	0773679	0777312	0780942	0784568	0788192	3636
120	0791812	0795430	0799045	0802656	0806265	0809870	0813473	0817073	0820669	0824263	3605
121	0827854	0831441	0835026	0838608	0842187	0845763	0849336	0852906	0856473	0860037	3576
122	0863598	0867157	0870712	0874265	0877814	0881361	0884905	0888446	0891984	0895519	3547
123	0899051	0902581	0906107	0909631	0913152	0916670	0920185	0923697	0927206	0930713	3518
124	0934217	0937718	0941216	0944711	0948204	0951694	0955180	0958665	0962146	0965624	3490
125	0969100	0972573	0976043	0979511	0982975	0986437	0989896	0993353	0996806	1000257	3462
126	1003705	1007151	1010594	1014034	1017471	1020905	1024337	1027766	1031193	1034616	3434
127	1038037	1041456	1044871	1048284	1051694	1055102	1058507	1061909	1065309	1068705	3408
128	1072100	1075491	1078880	1082267	1085650	1089031	1092410	1095785	1099159	1102529	3381
129	1105897	1109262	1112625	1115985	1119343	1122698	1126050	1129400	1132747	1136092	3355
130	1139434	1142773	1146110	1149444	1152776	1156105	1159432	1162756	1166077	1169396	3329
131	1172713	1176027	1179338	1182647	1185954	1189258	1192559	1195858	1199154	1202448	3304
132	1205739	1209028	1212315	1215598	1218880	1222159	1225435	1228709	1231981	1235250	3279
133	1238516	1241781	1245042	1248301	1251558	1254813	1258065	1261314	1264561	1267806	3255
134	1271048	1274288	1277525	1280760	1283993	1287223	1290451	1293676	1296899	1300119	3230
135	1303338	1306553	1309767	1312978	1316187	1319393	1322597	1325798	1328998	1332195	3206
136	1335389	1338581	1341771	1344959	1348144	1351327	1354507	1357685	1360861	1364034	3183
137	1367206	1370375	1373541	1376705	1379867	1383027	1386184	1389339	1392492	1395643	3160
138	1398791	1401937	1405080	1408222	1411361	1414498	1417632	1420765	1423895	1427022	3137
139	1430148	1433271	1436392	1439511	1442628	1445742	1448854	1451964	1455072	1458177	3114
140	1461280	1464381	1467480	1470577	1473671	1476763	1479853	1482941	1486027	1489110	3092
141	1492191	1495270	1498347	1501422	1504494	1507564	1510633	1513699	1516762	1519824	3070
142	1522883	1525941	1528996	1532049	1535100	1538149	1541195	1544240	1547282	1550322	3049
143	1553360	1556396	1559430	1562462	1565492	1568519	1571544	1574568	1577589	1580608	3027
144	1583625	1586640	1589653	1592663	1595672	1598678	1601683	1604685	1607686	1610684	3006
145	1613680	1616674	1619666	1622656	1625644	1628630	1631614	1634596	1637575	1640553	2986
146	1643529	1646502	1649474	1652443	1655411	1658376	1661340	1664301	1667261	1670218	2965
147	1673173	1676127	1679078	1682027	1684975	1687920	1690864	1693805	1696744	1699682	2945
148	1702617	1705551	1708482	1711412	1714339	1717265	1720188	1723110	1726029	1728947	2926
149	1731863	1734776	1737688	1740598	1743506	1746412	1749316	1752218	1755118	1758016	2906
150	1760913	1763807	1766699	1769590	1772478	1775365	1778250	1781133	1784013	1786892	2887
151	1789769	1792645	1795518	1798389	1801259	1804126	1806992	1809856	1812718	1815578	2867
152	1818436	1821292	1824147	1826999	1829850	1832698	1835545	1838390	1841234	1844075	2848
153	1846914	1849752	1852588	1855422	1858254	1861084	1863912	1866739	1869563	1872386	2830
154	1875207	1878026	1880844	1883659	1886473	1889285	1892095	1894903	1897710	1900514	2812
155	1903317	1906118	1908917	1911715	1914510	1917304	1920096	1922886	1925675	1928461	2794
156	1931246	1934029	1936810	1939590	1942367	1945143	1947918	1950690	1953461	1956229	2776
157	1958997	1961762	1964525	1967287	1970047	1972806	1975562	1978317	1981070	1983821	2759
158	1986571	1989319	1992065	1994809	1997552	2000293	2003032	2005769	2008505	2011239	2741
159	2013971	2016702	2019431	2022158	2024883	2027607	2030329	2033049	2035768	2038485	2724
160	2041200	2043913	2046625	2049335	2052044	2054750	2057455	2060159	2062860	2065560	2706
161	2068259	2070955	2073650	2076344	2079035	2081725	2084414	2087100	2089785	2092468	2690
162	2095150	2097830	2100508	2103185	2105860	2108534	2111205	2113876	2116544	2119211	2674
163	2121876	2124540	2127202	2129862	2132521	2135178	2137833	2140487	2143139	2145790	2657
164	2148438	2151086	2153732	2156376	2159018	2161659	2164298	2166936	2169572	2172207	2641
165	2174839	2177471	2180100	2182729	2185355	2187980	2190603	2193225	2195845	2198464	2625
166	2201081	2203696	2206310	2208922	2211533	2214142	2216750	2219356	2221960	2224563	2609
167	2227165	2229764	2232363	2234959	2237555	2240148	2242740	2245331	2247920	2250507	2593
168	2253093	2255677	2258260	2260841	2263421	2265999	2268576	2271151	2273724	2276296	2578
169	2278867	2281436	2284004	2286570	2289134	2291697	2294258	2296818	2299377	2301934	2563

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170	2304489	2307043	2309596	2312146	2314696	2317244	2319790	2322335	2324879	2327421	2548
171	2329961	2332500	2335038	2337574	2340108	2342641	2345173	2347703	2350232	2352759	2533
172	2355284	2357809	2360331	2362853	2365373	2367891	2370408	2372923	2375437	2377950	2518
173	2380461	2382971	2385479	2387986	2390491	2392995	2395497	2397998	2400498	2402996	2504
174	2405492	2407988	2410482	2412974	2415465	2417954	2420442	2422929	2425414	2427898	2489
175	2430380	2432861	2435341	2437819	2440296	2442771	2445245	2447718	2450189	2452658	2475
176	2455127	2457594	2460059	2462523	2464986	2467447	2469907	2472365	2474823	2477278	2461
177	2479733	2482186	2484637	2487087	2489536	2491984	2494430	2496874	2499318	2501759	2448
178	2504200	2506639	2509077	2511513	2513949	2516382	2518815	2521246	2523675	2526103	2433
179	2528530	2530956	2533380	2535803	2538224	2540645	2543063	2545481	2547897	2550312	2421
180	2552725	2555137	2557548	2559957	2562365	2564772	2567177	2569582	2571984	2574386	2407
181	2576786	2579185	2581582	2583978	2586373	2588766	2591158	2593549	2595939	2598327	2393
182	2600714	2603099	2605484	2607867	2610248	2612629	2615008	2617385	2619762	2622137	2381
183	2624511	2626883	2629255	2631625	2633993	2636361	2638727	2641092	2643455	2645817	2368
184	2648178	2650538	2652896	2655253	2657609	2659964	2662317	2664669	2667020	2669369	2355
185	2671717	2674064	2676410	2678754	2681097	2683439	2685780	2688119	2690457	2692794	2342
186	2695129	2697464	2699797	2702129	2704459	2706788	2709116	2711443	2713769	2716093	2329
187	2718416	2720738	2723058	2725378	2727696	2730013	2732328	2734643	2736956	2739268	2317
188	2741578	2743888	2746196	2748503	2750809	2753114	2755417	2757719	2760020	2762320	2305
189	2764618	2766915	2769211	2771506	2773800	2776092	2778383	2780673	2782962	2785250	2292
190	2787536	2789821	2792105	2794388	2796669	2798950	2801229	2803507	2805784	2808059	2281
191	2810334	2812607	2814879	2817150	2819419	2821688	2823955	2826221	2828486	2830750	2269
192	2833012	2835274	2837534	2839793	2842051	2844307	2846563	2848817	2851070	2853322	2256
193	2855573	2857823	2860071	2862319	2864565	2866810	2869054	2871296	2873538	2875778	2245
194	2878017	2880255	2882492	2884728	2886963	2889196	2891428	2893660	2895890	2898118	2233
195	2900346	2902573	2904798	2907022	2909246	2911468	2913689	2915908	2918127	2920344	2222
196	2922561	2924776	2926990	2929203	2931415	2933626	2935835	2938044	2940251	2942457	2211
197	2944662	2946866	2949069	2951271	2953471	2955671	2957869	2960067	2962263	2964458	2200
198	2966652	2968845	2971037	2973227	2975417	2977605	2979792	2981979	2984164	2986348	2188
199	2988531	2990713	2992893	2995073	2997252	2999429	3001605	3003781	3005955	3008128	2177
200	3010300	3012471	3014641	3016809	3018977	3021144	3023309	3025474	3027637	3029799	2167
201	3031961	3034121	3036280	3038438	3040595	3042751	3044905	3047059	3049212	3051363	2156
202	3053514	3055663	3057812	3059959	3062105	3064250	3066394	3068537	3070680	3072820	2145
203	3074960	3077099	3079237	3081374	3083509	3085644	3087778	3089910	3092042	3094172	2135
204	3096302	3098430	3100557	3102684	3104809	3106933	3109056	3111178	3113300	3115420	2124
205	3117539	3119657	3121774	3123889	3126004	3128118	3130231	3132343	3134454	3136563	2114
206	3138672	3140780	3142887	3144992	3147097	3149201	3151303	3153405	3155505	3157605	2104
207	3159703	3161801	3163898	3165993	3168088	3170181	3172273	3174365	3176455	3178545	2093
208	3180633	3182721	3184807	3186893	3188977	3191061	3193143	3195224	3197305	3199384	2084
209	3201463	3203540	3205617	3207692	3209767	3211840	3213913	3215984	3218055	3220124	2073
210	3222193	3224261	3226327	3228393	3230457	3232521	3234584	3236645	3238706	3240766	2064
211	3242825	3244882	3246939	3248995	3251050	3253104	3255157	3257209	3259260	3261310	2054
212	3263359	3265407	3267454	3269500	3271545	3273589	3275633	3277675	3279716	3281757	2044
213	3283796	3285834	3287872	3289909	3291944	3293979	3296012	3298045	3300077	3302108	2035
214	3304138	3306167	3308195	3310222	3312248	3314273	3316297	3318320	3320343	3322364	2025
215	3324385	3326404	3328423	3330440	3332457	3334473	3336488	3338501	3340514	3342526	2016
216	3344538	3346548	3348557	3350565	3352573	3354579	3356585	3358589	3360593	3362596	2006
217	3364597	3366598	3368598	3370597	3372595	3374593	3376589	3378584	3380579	3382572	1998
218	3384565	3386557	3388547	3390537	3392526	3394514	3396502	3398488	3400473	3402458	1988
219	3404441	3406424	3408405	3410386	3412366	3414345	3416323	3418301	3420277	3422252	1979
220	3424227	3426200	3428173	3430145	3432116	3434086	3436055	3438023	3439991	3441957	1970
221	3443923	3445887	3447851	3449814	3451776	3453737	3455698	3457657	3459615	3461573	1961
222	3463530	3465486	3467441	3469395	3471348	3473300	3475252	3477202	3479152	3481101	1952
223	3483049	3484996	3486942	3488887	3490832	3492775	3494718	3496660	3498601	3500541	1943
224	3502480	3504419	3506356	3508293	3510229	3512163	3514098	3516031	3517963	3519895	1934
225	3521825	3523755	3525684	3527612	3529539	3531465	3533391	3535316	3537239	3539162	1926
226	3541084	3543006	3544926	3546846	3548764	3550682	3552599	3554515	3556431	3558345	1918
227	3560259	3562171	3564083	3565994	3567905	3569814	3571723	3573630	3575537	3577443	1909
228	3579348	3581253	3583156	3585059	3586961	3588862	3590762	3592662	3594560	3596458	1901
229	3598355	3600251	3602146	3604041	3605934	3607827	3609719	3611610	3613500	3615390	1893
230	3617278	3619166	3621053	3622939	3624825	3626709	3628593	3630476	3632358	3634239	1884
231	3636120	3637999	3639878	3641756	3643634	3645510	3647386	3649260	3651134	3653007	1876
232	3654880	3656751	3658622	3660492	3662361	3664230	3666097	3667964	3669830	3671695	1869
233	3673559	3675423	3677285	3679147	3681009	3682869	3684728	3686587	3688445	3690302	1860
234	3692159	3694014	3695869	3697723	3699576	3701428	3703280	3705131	3706981	3708830	1852
235	3710679	3712526	3714373	3716219	3718065	3719909	3721753	3723596	3725438	3727279	1844
236	3729120	3730960	3732799	3734637	3736475	3738311	3740147	3741983	3743817	3745651	1836
237	3747483	3749316	3751147	3752977	3754807	3756636	3758464	3760292	3762119	3763944	1829
238	3765770	3767594	3769418	3771240	3773063	3774884	3776704	3778524	3780343	3782161	1821
239	3783979	3785796	3787612	3789427	3791241	3793055	3794868	3796680	3798492	3800302	1814

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241	3820170	3821972	3823773	3825573	3827373	3829171	3830969	3832767	3834563	3836359	1798
242	3838154	3839948	3841741	3843534	3845326	3847117	3848908	3850698	3852487	3854275	1791
243	3856063	3857850	3859636	3861421	3863206	3864990	3866773	3868555	3870337	3872118	1784
244	3873898	3875678	3877457	3879235	3881012	3882789	3884565	3886340	3888114	3889888	1777
245	3891661	3893433	3895205	3896975	3898746	3900515	3902284	3904052	3905819	3907585	1768
246	3909351	3911116	3912880	3914644	3916407	3918169	3919931	3921691	3923452	3925211	1762
247	3926970	3928727	3930485	3932241	3933997	3935752	3937506	3939260	3941013	3942765	1755
248	3944517	3946268	3948018	3949767	3951516	3953264	3955011	3956758	3958504	3960249	1748
249	3961993	3963737	3965480	3967223	3968964	3970705	3972446	3974185	3975924	3977663	1741
250	3979400	3981137	3982873	3984608	3986343	3988077	3989811	3991543	3993275	3995007	1734
251	3996737	3998467	4000196	4001925	4003653	4005380	4007106	4008832	4010557	4012282	1727
252	4014005	4015728	4017451	4019173	4020894	4022614	4024333	4026052	4027771	4029488	1720
253	4031205	4032921	4034637	4036352	4038066	4039780	4041492	4043205	4044916	4046627	1714
254	4048337	4050047	4051755	4053464	4055171	4056878	4058584	4060289	4061994	4063698	1707
255	4065402	4067105	4068807	4070508	4072209	4073909	4075608	4077307	4079005	4080703	1700
256	4082400	4084096	4085791	4087486	4089180	4090874	4092567	4094259	4095950	4097641	1694
257	4099331	4101021	4102710	4104398	4106085	4107772	4109459	4111144	4112829	4114513	1687
258	4116197	4117880	4119562	4121244	4122925	4124605	4126285	4127964	4129643	4131321	1680
259	4132998	4134674	4136350	4138025	4139700	4141374	4143047	4144719	4146391	4148063	1674
260	4149733	4151404	4153073	4154742	4156410	4158077	4159744	4161410	4163076	4164741	1667
261	4166405	4168069	4169732	4171394	4173056	4174717	4176377	4178037	4179696	4181355	1661
262	4183013	4184670	4186327	4187983	4189638	4191293	4192947	4194601	4196254	4197906	1655
263	4199557	4201208	4202859	4204509	4206158	4207806	4209454	4211101	4212748	4214394	1648
264	4216039	4217684	4219328	4220972	4222615	4224257	4225898	4227539	4229180	4230820	1642
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952	9786369	9786826	9787282	9787738	9788194	9788650	9789106	9789562	9790017	9790473	456
953	9790929	9791385	9791840	9792296	9792751	9793207	9793662	9794118	9794573	9795028	456
954	9795484	9795939	9796394	9796849	9797304	9797759	9798214	9798669	9799124	9799579	455
955	9800034	9800488	9800943	9801398	9801852	9802307	9802761	9803216	9803670	9804125	455
956	9804579	9805033	9805487	9805942	9806396	9806850	9807304	9807758	9808212	9808666	454
957	9809119	9809573	9810027	9810481	9810934	9811388	9811841	9812295	9812748	9813202	454
958	9813655	9814108	9814562	9815015	9815468	9815921	9816374	9816827	9817280	9817733	453
959	9818186	9818639	9819092	9819544	9819997	9820450	9820902	9821355	9821807	9822260	453
960	9822712	9823165	9823617	9824069	9824522	9824974	9825426	9825878	9826330	9826782	452
961	9827234	9827686	9828138	9828589	9829041	9829493	9829945	9830396	9830848	9831299	452
962	9831751	9832202	9832654	9833105	9833556	9834007	9834459	9834910	9835361	9835812	451
963	9836263	9836714	9837165	9837616	9838066	9838517	9838968	9839419	9839869	9840320	451
964	9840770	9841221	9841671	9842122	9842572	9843022	9843473	9843923	9844373	9844823	450
965	9845273	9845723	9846173	9846623	9847073	9847523	9847973	9848422	9848872	9849322	450
966	9849771	9850221	9850670	9851120	9851569	9852019	9852468	9852917	9853366	9853816	450
967	9854265	9854714	9855163	9855612	9856061	9856510	9856959	9857407	9857856	9858305	449
968	9858754	9859202	9859651	9860099	9860548	9860996	9861445	9861893	9862341	9862790	448
969	9863238	9863686	9864134	9864582	9865030	9865478	9865926	9866374	9866822	9867270	448
970	9867717	9868165	9868613	9869060	9869508	9869955	9870403	9870850	9871298	9871745	447
971	9872192	9872640	9873087	9873534	9873981	9874428	9874875	9875322	9875769	9876216	447
972	9876663	9877109	9877556	9878003	9878450	9878896	9879343	9879789	9880236	9880682	446
973	9881128	9881575	9882021	9882467	9882913	9883360	9883806	9884252	9884698	9885144	446
974	9885590	9886035	9886481	9886927	9887373	9887818	9888264	9888710	9889155	9889601	445
975	9890046	9890492	9890937	9891382	9891828	9892273	9892718	9893163	9893608	9894053	445
976	9894498	9894943	9895388	9895833	9896278	9896722	9897167	9897612	9898057	9898501	444
977	9898946	9899390	9899835	9900279	9900723	9901168	9901612	9902056	9902500	9902944	444
978	9903389	9903833	9904277	9904721	9905164	9905608	9906052	9906496	9906940	9907383	444
979	9907827	9908271	9908714	9909158	9909601	9910044	9910488	9910931	9911374	9911818	443
980	9912261	9912704	9913147	9913590	9914033	9914476	9914919	9915362	9915805	9916247	443
981	9916690	9917133	9917575	9918018	9918461	9918903	9919345	9919788	9920230	9920673	442
982	9921115	9921557	9921999	9922441	9922884	9923326	9923768	9924210	9924651	9925093	442
983	9925535	9925977	9926419	9926860	9927302	9927744	9928185	9928627	9929068	9929510	442
984	9929951	9930392	9930834	9931275	9931716	9932157	9932598	9933039	9933480	9933921	441
985	9934362	9934803	9935244	9935685	9936126	9936566	9937007	9937448	9937888	9938329	440
986	9938769	9939210	9939650	9940090	9940531	9940971	9941411	9941851	9942291	9942731	440
987	9943172	9943612	9944051	9944491	9944931	9945371	9945811	9946251	9946690	9947130	440
988	9947569	9948009	9948448	9948888	9949327	9949767	9950206	9950645	9951085	9951524	440
989	9951963	9952402	9952841	9953280	9953719	9954158	9954597	9955036	9955474	9955913	439
990	9956352	9956791	9957229	9957668	9958106	9958545	9958983	9959422	9959860	9960298	439
991	9960737	9961175	9961613	9962051	9962489	9962927	9963365	9963803	9964241	9964679	438
992	9965117	9965554	9965992	9966430	9966868	9967305	9967743	9968180	9968618	9969055	437
993	9969492	9969930	9970367	9970804	9971242	9971679	9972116	9972553	9972990	9973427	437
994	9973864	9974301	9974738	9975174	9975611	9976048	9976485	9976921	9977358	9977794	437
995	9978231	9978667	9979104	9979540	9979976	9980413	9980849	9981285	9981721	9982157	437
996	9982593	9983029	9983465	9983901	9984337	9984773	9985209	9985645	9986080	9986516	436
997	9986952	9987387	9987823	9988258	9988694	9989129	9989564	9990000	9990435	9990870	435
998	9991305	9991741	9992176	9992611	9993046	9993481	9993916	9994350	9994785	9995220	435
999	9995655	9996090	9996524	9996959	9997393	9997828	9998262	9998697	9999131	9999566	435
1000	0000000	0000434	0000869	0001303	0001737	0002171	0002605	0003039	0003473	0003907	434
1001	0004341	0004775	0005208	0005642	0006076	0006510	0006943	0007377	0007810	0008244	434
1002	0008677	0009111	0009544	0009977	0010411	0010844	0011277	0011710	0012143	0012576	433
1003	0013009	0013442	0013875	0014308	0014741	0015174	0015607	0016039	0016472	0016905	433
1004	0017337	0017770	0018202	0018635	0019067	0019499	0019932	0020364	0020796	0021228	432
1005	0021661	0022093	0022525	0022957	0023389	0023821	0024253	0024685	0025116	0025548	432
1006	0025980	0026411	0026843	0027275	0027706	0028138	0028569	0029001	0029432	0029863	432
1007	0030295	0030726	0031157	0031588	0032019	0032451	0032882	0033313	0033744	0034174	432
1008	0034605	0035036	0035467	0035898	0036328	0036759	0037190	0037620	0038051	0038481	431
1009	0038912	0039342	0039772	0040203	0040633	0041063	0041493	0041924	0042354	0042784	430

0°									179°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif	Co-tangent.	Secant.	D.	Co-sine.	′
0	Inf. Neg.	Infinite.	Infinite.	Inf. Neg.	Infinite.	Infinite.	10.0000000	0	10.0000000	60
1	6.4637261	3010300	13.5362739	6.4637261	3010301	13.5362739	10.0000000	1	10.0000000	59
2	6.7647561	1760912	13.2352439	6.7647562	1760913	13.2352438	10.0000001	1	9.9999999	58
3	6.9408473	1249387	13.0591527	6.9408475	1249388	13.0591525	10.0000002	1	9.9999998	57
4	7.0657860	969100	12.9342140	7.0657863	969101	12.9342137	10.0000003	2	9.9999997	56
5	7.1626960	791811	12.8373040	7.1626964	791814	12.8373036	10.0000005	2	9.9999995	55
6	7.2418771	669468	12.7581229	7.2418778	669470	12.7581222	10.0000007	2	9.9999993	54
7	7.3088239	579918	12.6911761	7.3088248	579921	12.6911752	10.0000009	3	9.9999991	53
8	7.3668157	511524	12.6331843	7.3668169	511527	12.6331831	10.0000012	3	9.9999988	52
9	7.4179681	457574	12.5820319	7.4179696	457577	12.5820304	10.0000015	3	9.9999985	51
10	7.4637255	413926	12.5362745	7.4637273	413930	12.5362727	10.0000018	4	9.9999982	50
11	7.5051181	377884	12.4948819	7.5051203	377888	12.4948797	10.0000022	4	9.9999978	49
12	7.5429065	347619	12.4570935	7.5429091	347624	12.4570909	10.0000026	4	9.9999974	48
13	7.5776684	321846	12.4223316	7.5776715	321851	12.4223285	10.0000031	5	9.9999969	47
14	7.6098530	299630	12.3901470	7.6098566	299635	12.3901434	10.0000036	5	9.9999964	46
15	7.6398160	280285	12.3601840	7.6398201	280291	12.3601799	10.0000041	5	9.9999959	45
16	7.6678445	263288	12.3321555	7.6678492	263294	12.3321508	10.0000047	6	9.9999953	44
17	7.6941733	248233	12.3058267	7.6941786	248240	12.3058214	10.0000053	6	9.9999947	43
18	7.7189966	234809	12.2810034	7.7190026	234815	12.2809974	10.0000060	7	9.9999940	42
19	7.7424775	222762	12.2575225	7.7424841	222769	12.2575159	10.0000066	6	9.9999934	41
20	7.7647537	211890	12.2352463	7.7647610	211898	12.2352390	10.0000073	7	9.9999927	40
21	7.7859427	202031	12.2140573	7.7859508	202039	12.2140492	10.0000081	8	9.9999919	39
22	7.8061458	193049	12.1938542	7.8061547	193057	12.1938453	10.0000089	8	9.9999911	38
23	7.8254507	184831	12.1745493	7.8254604	184840	12.1745396	10.0000097	8	9.9999903	37
24	7.8439338	177285	12.1560662	7.8439444	177294	12.1560556	10.0000106	9	9.9999894	36
25	7.8616623	170330	12.1383377	7.8616738	170339	12.1383262	10.0000115	9	9.9999885	35
26	7.8786953	163901	12.1213047	7.8787077	163911	12.1212923	10.0000124	9	9.9999876	34
27	7.8950854	157939	12.1049146	7.8950988	157950	12.1049012	10.0000134	10	9.9999866	33
28	7.9108793	152397	12.0891207	7.9108938	152406	12.0891062	10.0000144	10	9.9999856	32
29	7.9261190	147229	12.0738810	7.9261344	147240	12.0738656	10.0000155	11	9.9999845	31
30	7.9408419	142400	12.0591581	7.9408584	142412	12.0591416	10.0000165	10	9.9999835	30
31	7.9550819	137879	12.0449181	7.9550996	137890	12.0449004	10.0000177	12	9.9999823	29
32	7.9688698	133636	12.0311302	7.9688886	133648	12.0311114	10.0000188	11	9.9999812	28
33	7.9822334	129646	12.0177666	7.9822534	129658	12.0177466	10.0000200	12	9.9999800	27
34	7.9951980	125887	12.0048020	7.9952192	125900	12.0047808	10.0000212	12	9.9999788	26
35	8.0077867	122340	11.9922133	8.0078092	122353	11.9921908	10.0000225	13	9.9999775	25
36	8.0200207	118988	11.9799793	8.0200445	119001	11.9799555	10.0000238	13	9.9999762	24
37	8.0319195	115814	11.9680805	8.0319446	115823	11.9680554	10.0000252	14	9.9999748	23
38	8.0435009	112805	11.9564991	8.0435274	112820	11.9564726	10.0000265	13	9.9999735	22
39	8.0547814	109949	11.9452186	8.0548094	109963	11.9451906	10.0000279	14	9.9999721	21
40	8.0657763	107234	11.9342237	8.0658057	107249	11.9341943	10.0000294	15	9.9999706	20
41	8.0764997	104649	11.9235003	8.0765306	104664	11.9234694	10.0000309	15	9.9999691	19
42	8.0869646	102186	11.9130354	8.0869970	102202	11.9130030	10.0000324	15	9.9999676	18
43	8.0971832	99837	11.9028168	8.0972172	99853	11.9027828	10.0000340	16	9.9999660	17
44	8.1071669	97593	11.8928331	8.1072025	97609	11.8927975	10.0000356	16	9.9999644	16
45	8.1169262	95448	11.8830738	8.1169634	95465	11.8830366	10.0000372	16	9.9999628	15
46	8.1264710	93394	11.8735290	8.1265099	93411	11.8734901	10.0000389	17	9.9999611	14
47	8.1358104	91428	11.8641896	8.1358510	91446	11.8641490	10.0000406	17	9.9999594	13
48	8.1449532	89543	11.8550468	8.1449956	89560	11.8550044	10.0000423	17	9.9999577	12
49	8.1539075	87733	11.8460925	8.1539516	87751	11.8460484	10.0000441	18	9.9999559	11
50	8.1626808	85996	11.8373192	8.1627267	86015	11.8372733	10.0000459	18	9.9999541	10
51	8.1712804	84325	11.8287196	8.1713282	84344	11.8286718	10.0000478	19	9.9999522	9
52	8.1797129	82719	11.8202871	8.1797626	82738	11.8202374	10.0000497	19	9.9999503	8
53	8.1879848	81172	11.8120152	8.1880364	81192	11.8119636	10.0000516	19	9.9999484	7
54	8.1961020	79683	11.8038980	8.1961556	79703	11.8038444	10.0000536	20	9.9999464	6
55	8.2040703	78246	11.7959297	8.2041259	78267	11.7958741	10.0000556	20	9.9999444	5
56	8.2118949	76862	11.7881051	8.2119526	76882	11.7880474	10.0000576	21	9.9999424	4
57	8.2195811	75524	11.7804189	8.2196408	75545	11.7803592	10.0000597	21	9.9999403	3
58	8.2271335	74233	11.7728665	8.2271953	74255	11.7728047	10.0000618	21	9.9999382	2
59	8.2345568	72985	11.7654432	8.2346208	73007	11.7653792	10.0000640	22	9.9999360	1
60	8.2418553		11.7581447	8.2419215		11.7580785	10.0000662	22	9.9999338	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	D.	Sine.	′
90°										89°

1°									178°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	D.	Co-sine.	′
0	8.2418553		11.7581447	8.2419215		11.7580785	10.0000662		9.9999338	60
1	8.2490332	71779	11.7509668	8.2491015	71800	11.7508985	10.0000684	22	9.9999316	59
2	8.2560943	70611	11.7439057	8.2561649	70634	11.7438351	10.0000706	22	9.9999294	58
3	8.2630424	69481	11.7369576	8.2631153	69504	11.7368847	10.0000729	23	9.9999271	57
4	8.2698810	68386	11.7301190	8.2699563	68410	11.7300437	10.0000753	24	9.9999247	56
5	8.2766136	67326	11.7233864	8.2766912	67349	11.7233088	10.0000776	23	9.9999224	55
6	8.2832434	66298	11.7167566	8.2833234	66322	11.7166766	10.0000800	24	9.9999200	54
		65300						25		
7	8.2897734	64333	11.7102266	8.2898559	65325	11.7101441	10.0000825	25	9.9999175	53
8	8.2962067	63393	11.7037933	8.2962917	64358	11.7037083	10.0000850	25	9.9999150	52
9	8.3025460	62481	11.6974540	8.3026335	63418	11.6973665	10.0000875	25	9.9999125	51
10	8.3087941	61595	11.6912059	8.3088842	62507	11.6911158	10.0000900	25	9.9999100	50
11	8.3149536	60733	11.6850464	8.3150462	61620	11.6849538	10.0000926	26	9.9999074	49
12	8.3210269		11.6789731	8.3211221	60759	11.6788779	10.0000953	27	9.9999047	48
		59894			59922			26		
13	8.3270163	59080	11.6729837	8.3271143	59106	11.6728857	10.0000979	27	9.9999021	47
14	8.3329243	58286	11.6670757	8.3330249	58314	11.6669751	10.0001006	27	9.9998994	46
15	8.3387529	57514	11.6612471	8.3388563	57542	11.6611437	10.0001034	28	9.9998966	45
16	8.3445043	56762	11.6554957	8.3446105	56790	11.6553895	10.0001061	27	9.9998939	44
17	8.3501805	56030	11.6498195	8.3502895	56058	11.6497105	10.0001089	28	9.9998911	43
18	8.3557835		11.6442165	8.3558953		11.6441047	10.0001118	29	9.9998882	42
		55315			55344			29		
19	8.3613150	54619	11.6386850	8.3614297	54648	11.6385703	10.0001147	29	9.9998853	41
20	8.3667769	53941	11.6332231	8.3668945	53970	11.6331055	10.0001176	30	9.9998824	40
21	8.3721710	53278	11.6278290	8.3722915	53308	11.6277085	10.0001206	30	9.9998794	39
22	8.3774988	52632	11.6225012	8.3776223	52663	11.6223777	10.0001236	30	9.9998764	38
23	8.3827620	52002	11.6172380	8.3828886	52032	11.6171114	10.0001266	30	9.9998734	37
24	8.3879622		11.6120378	8.3880918		11.6119082	10.0001297	31	9.9998703	36
		51386			51418			31		
25	8.3931008	50785	11.6068992	8.3932336	50816	11.6067664	10.0001328	31	9.9998672	35
26	8.3981793	50197	11.6018207	8.3983152	50229	11.6016848	10.0001359	32	9.9998641	34
27	8.4031990	49624	11.5968010	8.4033381	49656	11.5966619	10.0001391	32	9.9998609	33
28	8.4081614	49062	11.5918386	8.4083037	49095	11.5916963	10.0001423	33	9.9998577	32
29	8.4130676	48514	11.5869324	8.4132132	48547	11.5867868	10.0001456	32	9.9998544	31
30	8.4179190		11.5820810	8.4180679		11.5819321	10.0001488		9.9998512	30
		47978			48011			34		
31	8.4227168	47453	11.5772832	8.4228690	47486	11.5771310	10.0001522	33	9.9998478	29
32	8.4274621	46940	11.5725379	8.4276176	46974	11.5723824	10.0001555	34	9.9998445	28
33	8.4321561	46438	11.5678439	8.4323150	46472	11.5676850	10.0001589	35	9.9998411	27
34	8.4367999	45945	11.5632001	8.4369622	45981	11.5630378	10.0001624	34	9.9998376	26
35	8.4413944	45465	11.5586056	8.4415603	45500	11.5584397	10.0001658	36	9.9998342	25
36	8.4459409		11.5540591	8.4461103		11.5538897	10.0001694		9.9998306	24
		44993			45028			35		
37	8.4504402	44532	11.5495598	8.4506131	44568	11.5493869	10.0001729	36	9.9998271	23
38	8.4548934	44079	11.5451066	8.4550699	44115	11.5449301	10.0001765	36	9.9998235	22
39	8.4593013	43636	11.5406987	8.4594814	43672	11.5405186	10.0001801	37	9.9998199	21
40	8.4636649	43201	11.5363351	8.4638486	43239	11.5361514	10.0001838	37	9.9998162	20
41	8.4679850	42776	11.5320150	8.4681725	42813	11.5318275	10.0001875	37	9.9998125	19
42	8.4722626		11.5277374	8.4724538		11.5275462	10.0001912		9.9998088	18
		42358			42395			38		
43	8.4764984	41948	11.5235016	8.4766933	41987	11.5233067	10.0001950	38	9.9998050	17
44	8.4806932	41547	11.5193068	8.4808920	41585	11.5191080	10.0001988	38	9.9998012	16
45	8.4848479	41153	11.5151521	8.4850505	41191	11.5149495	10.0002026	39	9.9997974	15
46	8.4889632	40766	11.5110368	8.4891696	40806	11.5108304	10.0002065	39	9.9997935	14
47	8.4930398	40386	11.5069602	8.4932502	40426	11.5067498	10.0002104	39	9.9997896	13
48	8.4970784		11.5029216	8.4972928		11.5027072	10.0002144	40	9.9997856	12
		40014			40054			39		
49	8.5010798	39649	11.4989202	8.5012982	39689	11.4987018	10.0002183	41	9.9997817	11
50	8.5050447	39289	11.4949553	8.5052671	39330	11.4947329	10.0002224	40	9.9997776	10
51	8.5089736	38937	11.4910264	8.5092001	38977	11.4907999	10.0002264	41	9.9997736	9
52	8.5128673	38591	11.4871327	8.5130978	38632	11.4869022	10.0002305	42	9.9997695	8
53	8.5167264	38250	11.4832736	8.5169610	38292	11.4830390	10.0002347	41	9.9997653	7
54	8.5205514		11.4794486	8.5207902		11.4792098	10.0002388		9.9997612	6
		37916			37958			42		
55	8.5243430	37587	11.4756570	8.5245860	37630	11.4754140	10.0002430	43	9.9997570	5
56	8.5281017	37264	11.4718983	8.5283490	37307	11.4716510	10.0002473	43	9.9997527	4
57	8.5318281	36947	11.4681719	8.5320797	36990	11.4679203	10.0002516	43	9.9997484	3
58	8.5355228	36635	11.4644772	8.5357787	36679	11.4642213	10.0002559	43	9.9997441	2
59	8.5391863	36329	11.4608137	8.5394466	36372	11.4605534	10.0002602	43	9.9997398	1
60	8.5428192		11.4571808	8.5430838		11.4569162	10.0002646	44	9.9997354	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	D.	Sine.	′

91°	88°

2° 177°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	D.	Co-sine.	′
0	8.5428192	36026	11.4571808	8.5430838	36071	11.4569162	10.0002646	45	9.9997354	60
1	8.5464218	35730	11.4535782	8.5466909	35774	11.4533091	10.0002691	44	9.9997309	59
2	8.5499948	35438	11.4500052	8.5502683	35183	11.4497317	10.0002735	45	9.9997265	58
3	8.5535386	35150	11.4464614	8.5538166	35196	11.4461834	10.0002780	46	9.9997220	57
4	8.5570536	34868	11.4429464	8.5573362	34914	11.4426638	10.0002826	46	9.9997174	56
5	8.5605404	34590	11.4394596	8.5608276	34636	11.4391724	10.0002872	46	9.9997128	55
6	8.5639994	34316	11.4360006	8.5642912	34363	11.4357088	10.0002918	46	9.9997082	54
7	8.5674310	34047	11.4325690	8.5677275	31093	11.4322725	10.0002964	47	9.9997036	53
8	8.5708357	33782	11.4291643	8.5711368	33829	11.4288632	10.0003011	47	9.9996989	52
9	8.5742139	33521	11.4257861	8.5745197	33569	11.4254803	10.0003058	48	9.9996942	51
10	8.5775660	33263	11.4224340	8.5778766	33311	11.4221234	10.0003106	48	9.9996894	50
11	8.5808923	33010	11.4191077	8.5812077	33059	11.4187923	10.0003154	48	9.9996846	49
12	8.5841933	32761	11.4158067	8.5845136	32809	11.4154864	10.0003202	48	9.9996798	48
13	8.5874694	32515	11.4125306	8.5877945	32564	11.4122055	10.0003251	49	9.9996749	47
14	8.5907209	32274	11.4092791	8.5910509	32323	11.4089491	10.0003300	50	9.9996700	46
15	8.5939483	32034	11.4060517	8.5942832	32085	11.4057168	10.0003350	49	9.9996650	45
16	8.5971517	31800	11.4028483	8.5974917	31850	11.4025083	10.0003399	51	9.9996601	44
17	8.6003317	31569	11.3996683	8.6006767	31619	11.3993233	10.0003450	50	9.9996550	43
18	8.6034886	31340	11.3965114	8.6038386	31391	11.3961614	10.0003500	51	9.9996500	42
19	8.6066226	31115	11.3933774	8.6069777	31166	11.3930223	10.0003551	51	9.9996449	41
20	8.6097341	30894	11.3902659	8.6100943	30946	11.3899057	10.0003602	52	9.9996398	40
21	8.6128235	30675	11.3871765	8.6131889	30727	11.3868111	10.0003654	52	9.9996346	39
22	8.6158910	30459	11.3841090	8.6162616	30511	11.3837384	10.0003706	52	9.9996294	38
23	8.6189369	30247	11.3810631	8.6193127	30300	11.3806873	10.0003758	53	9.9996242	37
24	8.6219616	30037	11.3780384	8.6223427	30091	11.3776573	10.0003811	53	9.9996189	36
25	8.6249653	29831	11.3750347	8.6253518	29884	11.3746482	10.0003864	54	9.9996136	35
26	8.6279484	29627	11.3720516	8.6283402	29681	11.3716598	10.0003918	54	9.9996082	34
27	8.6309111	29426	11.3690889	8.6313083	29480	11.3686917	10.0003972	54	9.9996028	33
28	8.6338537	29227	11.3661463	8.6342563	29282	11.3657437	10.0004026	55	9.9995974	32
29	8.6367764	29032	11.3632236	8.6371845	29086	11.3628155	10.0004081	54	9.9995919	31
30	8.6396796	28838	11.3603204	8.6400931	28894	11.3599069	10.0004135	56	9.9995865	30
31	8.6425634	28648	11.3574366	8.6429825	28703	11.3570175	10.0004191	56	9.9995809	29
32	8.6454282	28460	11.3545718	8.6458528	28516	11.3541472	10.0004247	56	9.9995753	28
33	8.6482742	28274	11.3517258	8.6487044	28331	11.3512956	10.0004303	56	9.9995697	27
34	8.6511016	28091	11.3488984	8.6515375	28147	11.3484625	10.0004359	57	9.9995641	26
35	8.6539107	27910	11.3460893	8.6543522	27968	11.3456478	10.0004416	57	9.9995584	25
36	8.6567017	27731	11.3432983	8.6571490	27789	11.3428510	10.0004473	58	9.9995527	24
37	8.6594748	27555	11.3405252	8.6599279	27612	11.3400721	10.0004531	58	9.9995469	23
38	8.6622303	27381	11.3377697	8.6626891	27440	11.3373109	10.0004589	58	9.9995411	22
39	8.6649684	27209	11.3350316	8.6654331	27267	11.3345669	10.0004647	58	9.9995353	21
40	8.6676893	27039	11.3323107	8.6681598	27099	11.3318402	10.0004705	59	9.9995295	20
41	8.6703932	26872	11.3296068	8.6708697	26931	11.3291303	10.0004764	60	9.9995236	19
42	8.6730804	26706	11.3269196	8.6735628	26765	11.3264372	10.0004824	60	9.9995176	18
43	8.6757510	26542	11.3242490	8.6762393	26603	11.3237607	10.0004884	60	9.9995116	17
44	8.6784052	26381	11.3215948	8.6788996	26441	11.3211004	10.0004944	60	9.9995056	16
45	8.6810433	26221	11.3189567	8.6815437	26282	11.3184563	10.0005004	61	9.9994996	15
46	8.6836654	26064	11.3163346	8.6841719	26125	11.3158281	10.0005065	61	9.9994935	14
47	8.6862718	25907	11.3137282	8.6867844	25969	11.3132156	10.0005126	62	9.9994874	13
48	8.6888625	25754	11.3111375	8.6893813	25816	11.3106187	10.0005188	62	9.9994812	12
49	8.6914379	25601	11.3085621	8.6919629	25663	11.3080371	10.0005250	62	9.9994750	11
50	8.6939980	25451	11.3060020	8.6945292	25514	11.3054708	10.0005312	63	9.9994688	10
51	8.6965431	25303	11.3034569	8.6970806	25366	11.3029194	10.0005375	63	9.9994625	9
52	8.6990734	25155	11.3009266	8.6996172	25218	11.3003828	10.0005438	64	9.9994562	8
53	8.7015889	25010	11.2984111	8.7021390	25075	11.2978610	10.0005502	63	9.9994498	7
54	8.7040899	24867	11.2959101	8.7046465	24930	11.2953535	10.0005565	65	9.9994435	6
55	8.7065766	24724	11.2934234	8.7071395	24790	11.2928605	10.0005630	64	9.9994370	5
56	8.7090490	24585	11.2909510	8.7096185	24649	11.2903815	10.0005694	65	9.9994306	4
57	8.7115075	24445	11.2884925	8.7120834	24511	11.2879166	10.0005759	65	9.9994241	3
58	8.7139520	24309	11.2860480	8.7145345	24374	11.2854655	10.0005824	66	9.9994176	2
59	8.7163829	24173	11.2836171	8.7169719	24239	11.2830281	10.0005890	66	9.9994110	1
60	8.7188002		11.2811998	8.7193958		11.2806042	10.0005956		9.9994044	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	D.	Sine.	′

92° 87°

3° 176°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	D.	Co-sine.	′
0	8.7188002	24038	11.2811998	8.7193958	24105	11.2806042	10.0005956	66	9.9994044	60
1	8.7212040	23906	11.2787960	8.7218063	23972	11.2781937	10.0006022	67	9.9993978	59
2	8.7235946	23775	11.2764054	8.7242035	23842	11.2757965	10.0006089	67	9.9993911	58
3	8.7259721	23645	11.2740279	8.7265877	23712	11.2734123	10.0006156	68	9.9993844	57
4	8.7283366	23516	11.2716634	8.7289589	23585	11.2710411	10.0006224	68	9.9993776	56
5	8.7306882	23390	11.2693118	8.7313174	23457	11.2686826	10.0006292	68	9.9993708	55
6	8.7330272	23263	11.2669728	8.7336631	23333	11.2663369	10.0006360	68	9.9993640	54
7	8.7353535	23140	11.2646465	8.7359964	23208	11.2640036	10.0006428	69	9.9993572	53
8	8.7376675	23016	11.2623325	8.7383172	23086	11.2616828	10.0006497	70	9.9993503	52
9	8.7399691	22895	11.2600309	8.7406258	22964	11.2593742	10.0006567	69	9.9993433	51
10	8.7422586	22774	11.2577414	8.7429222	22845	11.2570778	10.0006636	71	9.9993364	50
11	8.7445360	22655	11.2554640	8.7452067	22725	11.2547933	10.0006707	70	9.9993293	49
12	8.7468015	22538	11.2531985	8.7474792	22608	11.2525208	10.0006777	71	9.9993223	48
13	8.7490553	22420	11.2509447	8.7497400	22492	11.2502600	10.0006848	71	9.9993152	47
14	8.7512973	22305	11.2487027	8.7519892	22377	11.2480108	10.0006919	72	9.9993081	46
15	8.7535278	22191	11.2464722	8.7542269	22262	11.2457731	10.0006991	71	9.9993009	45
16	8.7557469	22077	11.2442531	8.7564531	22150	11.2435469	10.0007062	73	9.9992938	44
17	8.7579546	21966	11.2420454	8.7586681	22038	11.2413319	10.0007135	72	9.9992865	43
18	8.7601512	21854	11.2398488	8.7608719	21928	11.2391281	10.0007207	73	9.9992793	42
19	8.7623366	21745	11.2376634	8.7630647	21818	11.2369353	10.0007280	74	9.9992720	41
20	8.7645111	21636	11.2354889	8.7652465	21710	11.2347535	10.0007354	74	9.9992646	40
21	8.7666747	21528	11.2333253	8.7674175	21602	11.2325825	10.0007428	74	9.9992572	39
22	8.7688275	21422	11.2311725	8.7695777	21497	11.2304223	10.0007502	74	9.9992498	38
23	8.7709697	21317	11.2290303	8.7717274	21391	11.2282726	10.0007576	74	9.9992424	37
24	8.7731014	21212	11.2268986	8.7738665	21287	11.2261335	10.0007651	75	9.9992349	36
25	8.7752226	21108	11.2247774	8.7759952	21184	11.2240048	10.0007726	75	9.9992274	35
26	8.7773334	21006	11.2226666	8.7781136	21082	11.2218864	10.0007802	76	9.9992198	34
27	8.7794340	20904	11.2205660	8.7802218	20981	11.2197782	10.0007878	76	9.9992122	33
28	8.7815244	20804	11.2184756	8.7823199	20880	11.2176801	10.0007954	76	9.9992046	32
29	8.7836048	20705	11.2163952	8.7844079	20782	11.2155921	10.0008031	77	9.9991969	31
30	8.7856753	20606	11.2143247	8.7864861	20683	11.2135139	10.0008108	77	9.9991892	30
31	8.7877359	20508	11.2122641	8.7885544	20586	11.2114456	10.0008185	78	9.9991815	29
32	8.7897867	20411	11.2102133	8.7906130	20490	11.2093870	10.0008263	78	9.9991737	28
33	8.7918278	20316	11.2081722	8.7926620	20394	11.2073380	10.0008341	78	9.9991659	27
34	8.7938594	20220	11.2061406	8.7947014	20299	11.2052986	10.0008420	79	9.9991580	26
35	8.7958814	20127	11.2041186	8.7967313	20206	11.2032687	10.0008499	79	9.9991501	25
36	8.7978941	20033	11.2021059	8.7987519	20113	11.2012481	10.0008578	79	9.9991422	24
37	8.7998974	19941	11.2001026	8.8007632	20021	11.1992368	10.0008658	80	9.9991342	23
38	8.8018915	19849	11.1981085	8.8027653	19930	11.1972347	10.0008738	80	9.9991262	22
39	8.8038764	19759	11.1961236	8.8047583	19839	11.1952417	10.0008818	80	9.9991182	21
40	8.8058523	19669	11.1941477	8.8067422	19750	11.1932578	10.0008899	81	9.9991101	20
41	8.8078192	19580	11.1921808	8.8087172	19662	11.1912828	10.0008980	81	9.9991020	19
42	8.8097772	19492	11.1902228	8.8106834	19573	11.1893166	10.0009062	82	9.9990938	18
43	8.8117264	19404	11.1882736	8.8126407	19487	11.1873593	10.0009144	82	9.9990856	17
44	8.8136668	19317	11.1863332	8.8145894	19400	11.1854106	10.0009226	83	9.9990774	16
45	8.8155985	19232	11.1844015	8.8165294	19314	11.1834706	10.0009309	83	9.9990691	15
46	8.8175217	19146	11.1824783	8.8184608	19230	11.1815392	10.0009392	83	9.9990608	14
47	8.8194363	19062	11.1805637	8.8203838	19146	11.1796162	10.0009475	84	9.9990525	13
48	8.8213425	18979	11.1786575	8.8222984	19062	11.1777016	10.0009559	84	9.9990441	12
49	8.8232404	18895	11.1767596	8.8242046	18980	11.1757954	10.0009643	84	9.9990357	11
50	8.8251299	18813	11.1748701	8.8261026	18898	11.1738974	10.0009727	85	9.9990273	10
51	8.8270112	18732	11.1729888	8.8279924	18817	11.1720076	10.0009812	85	9.9990188	9
52	8.8288844	18651	11.1711156	8.8298741	18737	11.1701259	10.0009897	86	9.9990103	8
53	8.8307495	18571	11.1692505	8.8317478	18656	11.1682522	10.0009983	86	9.9990017	7
54	8.8326066	18491	11.1673934	8.8336134	18578	11.1663866	10.0010069	86	9.9989931	6
55	8.8344557	18412	11.1655443	8.8354712	18499	11.1645288	10.0010155	87	9.9989845	5
56	8.8362969	18335	11.1637031	8.8373211	18422	11.1626789	10.0010242	87	9.9989758	4
57	8.8381304	18257	11.1618696	8.8391633	18344	11.1608367	10.0010329	87	9.9989671	3
58	8.8399561	18180	11.1600439	8.8409977	18268	11.1590023	10.0010416	87	9.9989584	2
59	8.8417741	18104	11.1582259	8.8428245	18192	11.1571755	10.0010504	88	9.9989496	1
60	8.8435845		11.1564155	8.8446437		11.1553563	10.0010592	88	9.9989408	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	D.	Sine.	′

93° 86°

4° 175°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	8.8435845	18029	11.1564155	8.8446437	18117	11.1553563	10.0010592	89	9.9989408	60
1	8.8453874	17953	11.1546126	8.8464554	18043	11.1535446	10.0010681	89	9.9989319	59
2	8.8471827	17880	11.1528173	8.8482597	17969	11.1517403	10.0010770	89	9.9989230	58
3	8.8489707	17805	11.1510293	8.8500566	17895	11.1499434	10.0010859	89	9.9989141	57
4	8.8507512	17733	11.1492488	8.8518461	17822	11.1481539	10.0010948	90	9.9989052	56
5	8.8525245	17660	11.1474755	8.8536283	17751	11.1463717	10.0011038	91	9.9988962	55
6	8.8542905	17588	11.1457095	8.8554034	17679	11.1445966	10.0011129	91	9.9988871	54
7	8.8560493	17517	11.1439507	8.8571713	17608	11.1428287	10.0011220	91	9.9988780	53
8	8.8578010	17447	11.1421990	8.8589321	17538	11.1410679	10.0011311	91	9.9988689	52
9	8.8595457	17376	11.1404543	8.8606859	17468	11.1393141	10.0011402	92	9.9988598	51
10	8.8612833	17306	11.1387167	8.8624327	17398	11.1375673	10.0011494	92	9.9988506	50
11	8.8630139	17237	11.1369861	8.8641725	17330	11.1358275	10.0011586	93	9.9988414	49
12	8.8647376	17169	11.1352624	8.8659055	17262	11.1340945	10.0011679	93	9.9988321	48
13	8.8664545	17101	11.1335455	8.8676317	17194	11.1323683	10.0011772	93	9.9988228	47
14	8.8681646	17034	11.1318354	8.8693511	17127	11.1306489	10.0011865	94	9.9988135	46
15	8.8698680	16966	11.1301320	8.8710638	17061	11.1289362	10.0011959	94	9.9988041	45
16	8.8715646	16900	11.1284354	8.8727699	16995	11.1272301	10.0012053	94	9.9987947	44
17	8.8732546	16835	11.1267454	8.8744694	16929	11.1255306	10.0012147	95	9.9987853	43
18	8.8749381	16769	11.1250619	8.8761623	16864	11.1238377	10.0012242	95	9.9987758	42
19	8.8766150	16704	11.1233850	8.8778487	16799	11.1221513	10.0012337	96	9.9987663	41
20	8.8782854	16639	11.1217146	8.8795286	16736	11.1204714	10.0012433	96	9.9987567	40
21	8.8799493	16576	11.1200507	8.8812022	16672	11.1187978	10.0012529	96	9.9987471	39
22	8.8816069	16512	11.1183931	8.8828694	16609	11.1171306	10.0012625	97	9.9987375	38
23	8.8832581	16450	11.1167419	8.8845303	16547	11.1154697	10.0012722	97	9.9987278	37
24	8.8849031	16387	11.1150969	8.8861850	16484	11.1138150	10.0012819	97	9.9987181	36
25	8.8865418	16325	11.1134582	8.8878334	16423	11.1121666	10.0012916	98	9.9987084	35
26	8.8881743	16264	11.1118257	8.8894757	16362	11.1105243	10.0013014	98	9.9986986	34
27	8.8898007	16202	11.1101993	8.8911119	16301	11.1088881	10.0013112	98	9.9986888	33
28	8.8914209	16142	11.1085791	8.8927420	16240	11.1072580	10.0013210	99	9.9986790	32
29	8.8930351	16082	11.1069649	8.8943660	16182	11.1056340	10.0013309	100	9.9986691	31
30	8.8946433	16022	11.1053567	8.8959842	16121	11.1040158	10.0013409	99	9.9986591	30
31	8.8962455	15963	11.1037545	8.8975963	16063	11.1024037	10.0013508	100	9.9986492	29
32	8.8978418	15904	11.1021582	8.8992026	16004	11.1007974	10.0013608	100	9.9986392	28
33	8.8994322	15846	11.1005678	8.9008030	15947	11.0991970	10.0013708	101	9.9986292	27
34	8.9010168	15787	11.0989832	8.9023977	15889	11.0976023	10.0013809	101	9.9986191	26
35	8.9025955	15730	11.0974045	8.9039866	15831	11.0960134	10.0013910	102	9.9986090	25
36	8.9041685	15673	11.0958315	8.9055697	15775	11.0944303	10.0014012	102	9.9985988	24
37	8.9057358	15617	11.0942642	8.9071472	15718	11.0928528	10.0014114	102	9.9985886	23
38	8.9072975	15560	11.0927025	8.9087190	15663	11.0912810	10.0014216	102	9.9985784	22
39	8.9088535	15504	11.0911465	8.9102853	15607	11.0897147	10.0014318	103	9.9985682	21
40	8.9104039	15448	11.0895961	8.9118460	15552	11.0881540	10.0014421	104	9.9985579	20
41	8.9119487	15394	11.0880513	8.9134012	15497	11.0865988	10.0014525	103	9.9985475	19
42	8.9134881	15338	11.0865119	8.9149509	15443	11.0850491	10.0014628	104	9.9985372	18
43	8.9150219	15285	11.0849781	8.9164952	15388	11.0835048	10.0014732	105	9.9985268	17
44	8.9165504	15230	11.0834496	8.9180340	15335	11.0819660	10.0014837	105	9.9985163	16
45	8.9180734	15177	11.0819266	8.9195675	15282	11.0804325	10.0014942	105	9.9985058	15
46	8.9195911	15123	11.0804089	8.9210957	15229	11.0789043	10.0015047	105	9.9984953	14
47	8.9211034	15071	11.0788966	8.9226186	15177	11.0773814	10.0015152	106	9.9984848	13
48	8.9226105	15018	11.0773895	8.9241363	15124	11.0758637	10.0015258	106	9.9984742	12
49	8.9241123	14966	11.0758877	8.9256487	15073	11.0743513	10.0015364	107	9.9984636	11
50	8.9256089	14914	11.0743911	8.9271560	15021	11.0728440	10.0015471	107	9.9984529	10
51	8.9271003	14863	11.0728997	8.9286581	14971	11.0713419	10.0015578	107	9.9984422	9
52	8.9285866	14812	11.0714134	8.9301552	14919	11.0698448	10.0015685	108	9.9984315	8
53	8.9300678	14761	11.0699322	8.9316471	14869	11.0683529	10.0015793	108	9.9984207	7
54	8.9315439	14711	11.0684561	8.9331340	14820	11.0668660	10.0015901	109	9.9984099	6
55	8.9330150	14661	11.0669850	8.9346160	14769	11.0653840	10.0016010	109	9.9983990	5
56	8.9344811	14611	11.0655189	8.9360929	14721	11.0639071	10.0016119	109	9.9983881	4
57	8.9359422	14561	11.0640578	8.9375650	14671	11.0624350	10.0016228	109	9.9983772	3
58	8.9373983	14513	11.0626017	8.9390321	14623	11.0609679	10.0016337	110	9.9983663	2
59	8.9388496	14464	11.0611504	8.9404944	14574	11.0595056	10.0016447	111	9.9983553	1
60	8.9402960		11.0597040	8.9419518		11.0580482	10.0016558		9.9983442	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

94° 85°

5° 174°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	8.9402960	14416	11.0597040	8.9419518	14526	11.0580482	10.0016558	110	9.9983442	60
1	8.9417376	14367	11.0582624	8.9434044	14479	11.0565956	10.0016668	112	9.9983332	59
2	8.9431743	14320	11.0568257	8.9448523	14431	11.0551477	10.0016780	111	9.9983220	58
3	8.9446063	14272	11.0553937	8.9462954	14384	11.0537046	10.0016891	112	9.9983109	57
4	8.9460335	14226	11.0539665	8.9477338	14338	11.0522662	10.0017003	112	9.9982997	56
5	8.9474561	14178	11.0525439	8.9491676	14291	11.0508324	10.0017115	113	9.9982885	55
6	8.9488739	14132	11.0511261	8.9505967	14244	11.0494033	10.0017228	112	9.9982772	54
7	8.9502871	14086	11.0497129	8.9520211	14199	11.0479789	10.0017340	114	9.9982660	53
8	8.9516957	14039	11.0483043	8.9534410	14154	11.0465590	10.0017454	113	9.9982546	52
9	8.9530996	13995	11.0469004	8.9548564	14108	11.0451436	10.0017567	115	9.9982433	51
10	8.9544991	13949	11.0455009	8.9562672	14063	11.0437328	10.0017682	114	9.9982318	50
11	8.9558940	13903	11.0441060	8.9576735	14019	11.0423265	10.0017796	115	9.9982204	49
12	8.9572843	13860	11.0427157	8.9590754	13974	11.0409246	10.0017911	115	9.9982089	48
13	8.9586703	13814	11.0413297	8.9604728	13931	11.0395272	10.0018026	115	9.9981974	47
14	8.9600517	13771	11.0399483	8.9618659	13886	11.0381341	10.0018141	116	9.9981859	46
15	8.9614288	13726	11.0385712	8.9632545	13843	11.0367455	10.0018257	117	9.9981743	45
16	8.9628014	13683	11.0371986	8.9646388	13800	11.0353612	10.0018374	116	9.9981626	44
17	8.9641697	13640	11.0358303	8.9660188	13756	11.0339812	10.0018490	117	9.9981510	43
18	8.9655337	13597	11.0344663	8.9673944	13714	11.0326056	10.0018607	118	9.9981393	42
19	8.9668934	13553	11.0331066	8.9687658	13672	11.0312342	10.0018725	117	9.9981275	41
20	8.9682487	13512	11.0317513	8.9701330	13629	11.0298670	10.0018842	118	9.9981158	40
21	8.9695999	13469	11.0304001	8.9714959	13588	11.0285041	10.0018960	119	9.9981040	39
22	8.9709468	13427	11.0290532	8.9728547	13545	11.0271453	10.0019079	119	9.9980921	38
23	8.9722895	13385	11.0277105	8.9742092	13505	11.0257908	10.0019198	119	9.9980802	37
24	8.9736280	13344	11.0263720	8.9755597	13463	11.0244403	10.0019317	120	9.9980683	36
25	8.9749624	13302	11.0250376	8.9769060	13423	11.0230940	10.0019437	120	9.9980563	35
26	8.9762926	13262	11.0237074	8.9782483	13382	11.0217517	10.0019557	120	9.9980443	34
27	8.9776188	13220	11.0223812	8.9795865	13341	11.0204135	10.0019677	121	9.9980323	33
28	8.9789408	13181	11.0210592	8.9809206	13301	11.0190794	10.0019798	121	9.9980202	32
29	8.9802589	13140	11.0197411	8.9822507	13262	11.0177493	10.0019919	121	9.9980081	31
30	8.9815729	13100	11.0184271	8.9835769	13222	11.0164231	10.0020040	122	9.9979960	30
31	8.9828829	13060	11.0171171	8.9848991	13182	11.0151009	10.0020162	122	9.9979838	29
32	8.9841889	13021	11.0158111	8.9862173	13144	11.0137827	10.0020284	123	9.9979716	28
33	8.9854910	12981	11.0145090	8.9875317	13104	11.0124683	10.0020407	123	9.9979593	27
34	8.9867891	12943	11.0132109	8.9888421	13066	11.0111579	10.0020530	123	9.9979470	26
35	8.9880834	12903	11.0119166	8.9901487	13027	11.0098513	10.0020653	124	9.9979347	25
36	8.9893737	12865	11.0106263	8.9914514	12989	11.0085486	10.0020777	124	9.9979223	24
37	8.9906602	12827	11.0093398	8.9927503	12951	11.0072497	10.0020901	124	9.9979099	23
38	8.9919429	12788	11.0080571	8.9940454	12913	11.0059546	10.0021025	125	9.9978975	22
39	8.9932217	12751	11.0067783	8.9953367	12876	11.0046633	10.0021150	125	9.9978850	21
40	8.9944968	12713	11.0055032	8.9966243	12838	11.0033757	10.0021275	126	9.9978725	20
41	8.9957681	12675	11.0042319	8.9979081	12802	11.0020919	10.0021401	126	9.9978599	19
42	8.9970356	12638	11.0029644	8.9991883	12764	11.0008117	10.0021527	126	9.9978473	18
43	8.9982994	12601	11.0017006	9.0004647	12728	10.9995353	10.0021653	127	9.9978347	17
44	8.9995595	12565	11.0004405	9.0017375	12691	10.9982625	10.0021780	127	9.9978220	16
45	9.0008160	12527	10.9991840	9.0030066	12655	10.9969934	10.0021907	127	9.9978093	15
46	9.0020687	12492	10.9979313	9.0042721	12619	10.9957279	10.0022034	128	9.9977966	14
47	9.0033179	12455	10.9966821	9.0055340	12584	10.9944660	10.0022162	128	9.9977838	13
48	9.0045634	12419	10.9954366	9.0067924	12547	10.9932076	10.0022290	128	9.9977710	12
49	9.0058053	12383	10.9941947	9.0080471	12513	10.9919529	10.0022418	129	9.9977582	11
50	9.0070436	12348	10.9929564	9.0092984	12477	10.9907016	10.0022547	130	9.9977453	10
51	9.0082784	12312	10.9917216	9.0105461	12442	10.9894539	10.0022677	129	9.9977323	9
52	9.0095096	12278	10.9904904	9.0117903	12407	10.9882097	10.0022806	130	9.9977194	8
53	9.0107374	12242	10.9892626	9.0130310	12372	10.9869690	10.0022936	131	9.9977064	7
54	9.0119616	12207	10.9880384	9.0142682	12339	10.9857318	10.0023067	130	9.9976933	6
55	9.0131823	12173	10.9868177	9.0155021	12304	10.9844979	10.0023197	131	9.9976803	5
56	9.0143996	12139	10.9856004	9.0167325	12269	10.9832675	10.0023328	132	9.9976672	4
57	9.0156135	12104	10.9843865	9.0179594	12237	10.9820406	10.0023460	132	9.9976540	3
58	9.0168239	12070	10.9831761	9.0191831	12202	10.9808169	10.0023592	132	9.9976408	2
59	9.0180309	12037	10.9819691	9.0204033	12169	10.9795967	10.0023724	133	9.9976276	1
60	9.0192346		10.9807654	9.0216202		10.9783798	10.0023857		9.9976143	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

95° 84°

6° 173°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.0192346		10.9807654	9.0216202		10.9783798	10.0023857		9.9976143	60
1	9.0204348	12002	10.9795652	9.0228338	12136	10.9771662	10.0023989	132	9.9976011	59
2	9.0216318	11970	10.9783682	9.0240441	12103	10.9759559	10.0024123	134	9.9975877	58
3	9.0228254	11936	10.9771746	9.0252510	12069	10.9747490	10.0024257	134	9.9975743	57
4	9.0240157	11903	10.9759843	9.0264548	12038	10.9735452	10.0024391	134	9.9975609	56
5	9.0252027	11870	10.9747973	9.0276552	12004	10.9723448	10.0024525	135	9.9975475	55
6	9.0263865	11838	10.9736135	9.0288524	11972	10.9711476	10.0024660	135	9.9975340	54
7	9.0275669	11804	10.9724331	9.0300464	11940	10.9699536	10.0024795	136	9.9975205	53
8	9.0287442	11773	10.9712558	9.0312373	11909	10.9687627	10.0024931	136	9.9975069	52
9	9.0299182	11740	10.9700818	9.0324249	11876	10.9675751	10.0025067	136	9.9974933	51
10	9.0310890	11708	10.9689110	9.0336093	11844	10.9663907	10.0025203	137	9.9974797	50
11	9.0322567	11677	10.9677433	9.0347906	11813	10.9652094	10.0025340	137	9.9974660	49
12	9.0334212	11645	10.9665788	9.0359688	11782	10.9640312	10.0025477	137	9.9974523	48
13	9.0345825	11613	10.9654175	9.0371439	11751	10.9628561	10.0025614	138	9.9974386	47
14	9.0357407	11582	10.9642593	9.0383159	11720	10.9616841	10.0025752	138	9.9974248	46
15	9.0368958	11551	10.9631042	9.0394848	11689	10.9605152	10.0025890	138	9.9974110	45
16	9.0380477	11519	10.9619523	9.0406506	11658	10.9593494	10.0026029	139	9.9973971	44
17	9.0391966	11489	10.9608034	9.0418134	11628	10.9581866	10.0026167	138	9.9973833	43
18	9.0403424	11458	10.9596576	9.0429731	11597	10.9570269	10.0026307	140	9.9973693	42
19	9.0414852	11428	10.9585148	9.0441299	11568	10.9558701	10.0026446	139	9.9973554	41
20	9.0426249	11397	10.9573751	9.0452836	11537	10.9547164	10.0026586	140	9.9973414	40
21	9.0437617	11368	10.9562383	9.0464343	11507	10.9535657	10.0026727	141	9.9973273	39
22	9.0448954	11337	10.9551046	9.0475821	11478	10.9524179	10.0026868	141	9.9973132	38
23	9.0460261	11307	10.9539739	9.0487270	11449	10.9512730	10.0027009	141	9.9972991	37
24	9.0471538	11277	10.9528462	9.0498689	11419	10.9501311	10.0027150	141	9.9972850	36
25	9.0482786	11248	10.9517214	9.0510078	11389	10.9489922	10.0027292	142	9.9972708	35
26	9.0494005	11219	10.9505995	9.0521439	11361	10.9478561	10.0027434	142	9.9972566	34
27	9.0505194	11189	10.9494806	9.0532771	11332	10.9467229	10.0027577	143	9.9972423	33
28	9.0516354	11160	10.9483646	9.0544074	11303	10.9455926	10.0027720	143	9.9972280	32
29	9.0527485	11131	10.9472515	9.0555349	11275	10.9444651	10.0027863	143	9.9972137	31
30	9.0538588	11103	10.9461412	9.0566595	11246	10.9433405	10.0028007	144	9.9971993	30
31	9.0549661	11073	10.9450339	9.0577813	11218	10.9422187	10.0028151	144	9.9971849	29
32	9.0560706	11045	10.9439294	9.0589002	11189	10.9410998	10.0028296	145	9.9971704	28
33	9.0571723	11017	10.9428277	9.0600164	11162	10.9399836	10.0028441	145	9.9971559	27
34	9.0582711	10988	10.9417289	9.0611297	11133	10.9388703	10.0028586	145	9.9971414	26
35	9.0593672	10961	10.9406328	9.0622403	11106	10.9377597	10.0028732	146	9.9971268	25
36	9.0604604	10932	10.9395396	9.0633482	11079	10.9366518	10.0028878	146	9.9971122	24
37	9.0615509	10905	10.9384491	9.0644533	11051	10.9355467	10.0029024	146	9.9970976	23
38	9.0626386	10877	10.9373614	9.0655556	11023	10.9344444	10.0029171	147	9.9970829	22
39	9.0637235	10849	10.9362765	9.0666553	10997	10.9333447	10.0029318	147	9.9970682	21
40	9.0648057	10822	10.9351943	9.0677522	10969	10.9322478	10.0029465	147	9.9970535	20
41	9.0658852	10795	10.9341148	9.0688465	10943	10.9311535	10.0029613	148	9.9970387	19
42	9.0669619	10767	10.9330381	9.0699381	10916	10.9300619	10.0029761	148	9.9970239	18
43	9.0680360	10741	10.9319640	9.0710270	10889	10.9289730	10.0029910	149	9.9970090	17
44	9.0691074	10714	10.9308926	9.0721133	10863	10.9278867	10.0030059	149	9.9969941	16
45	9.0701761	10687	10.9298239	9.0731969	10836	10.9268031	10.0030208	149	9.9969792	15
46	9.0712421	10660	10.9287579	9.0742779	10810	10.9257221	10.0030358	150	9.9969642	14
47	9.0723055	10634	10.9276945	9.0753563	10784	10.9246437	10.0030508	150	9.9969492	13
48	9.0733663	10608	10.9266337	9.0764321	10758	10.9235679	10.0030658	150	9.9969342	12
49	9.0744244	10581	10.9255756	9.0775053	10732	10.9224947	10.0030809	151	9.9969191	11
50	9.0754799	10555	10.9245201	9.0785760	10707	10.9214240	10.0030960	151	9.9969040	10
51	9.0765329	10530	10.9234671	9.0796441	10681	10.9203559	10.0031112	152	9.9968888	9
52	9.0775832	10503	10.9224168	9.0807096	10655	10.9192904	10.0031264	152	9.9968736	8
53	9.0786310	10478	10.9213690	9.0817726	10630	10.9182274	10.0031416	152	9.9968584	7
54	9.0796762	10452	10.9203238	9.0828331	10605	10.9171669	10.0031569	153	9.9968431	6
55	9.0807189	10427	10.9192811	9.0838911	10580	10.9161089	10.0031722	153	9.9968278	5
56	9.0817590	10401	10.9182410	9.0849466	10555	10.9150534	10.0031875	153	9.9968125	4
57	9.0827966	10376	10.9172034	9.0859996	10530	10.9140004	10.0032029	154	9.9967971	3
58	9.0838317	10351	10.9161683	9.0870501	10505	10.9129499	10.0032183	154	9.9967817	2
59	9.0848643	10326	10.9151357	9.0880981	10480	10.9119019	10.0032338	155	9.9967662	1
60	9.0858945	10302	10.9141055	9.0891438	10457	10.9108562	10.0032493	155	9.9967507	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif	Sine.	′

96° 83°

7°										172°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.0858945	10276	10.9141055	9.0891438	10431	10.9108562	10.0032493	155	9.9967507	60
1	9.0869221	10252	10.9130779	9.0901869	10408	10.9098131	10.0032648	156	9.9967352	59
2	9.0879473	10227	10.9120527	9.0912277	10383	10.9087723	10.0032804	156	9.9967196	58
3	9.0889700	10203	10.9110300	9.0922660	10360	10.9077340	10.0032960	156	9.9967040	57
4	9.0899903	10179	10.9100097	9.0933020	10335	10.9066980	10.0033116	157	9.9966884	56
5	9.0910082	10155	10.9089918	9.0943355	10312	10.9056645	10.0033273	157	9.9966727	55
6	9.0920237	10130	10.9079763	9.0953667	10288	10.9046333	10.0033430	158	9.9966570	54
7	9.0930367	10107	10.9069633	9.0963955	10264	10.9036045	10.0033588	158	9.9966412	53
8	9.0940474	10082	10.9059526	9.0974219	10241	10.9025781	10.0033746	158	9.9966254	52
9	9.0950556	10059	10.9049444	9.0984460	10218	10.9015540	10.0033904	159	9.9966096	51
10	9.0960615	10036	10.9039385	9.0994678	10194	10.9005322	10.0034063	159	9.9965937	50
11	9.0970651	10011	10.9029349	9.1004872	10172	10.8995128	10.0034222	159	9.9965778	49
12	9.0980662	9989	10.9019338	9.1015044	10148	10.8984956	10.0034381	160	9.9965619	48
13	9.0990651	9965	10.9009349	9.1025192	10125	10.8974808	10.0034541	160	9.9965459	47
14	9.1000616	9942	10.8999384	9.1035317	10103	10.8964683	10.0034701	161	9.9965299	46
15	9.1010558	9919	10.8989442	9.1045420	10080	10.8954580	10.0034862	161	9.9965138	45
16	9.1020477	9896	10.8979523	9.1055500	10057	10.8944500	10.0035023	161	9.9964977	44
17	9.1030373	9873	10.8969627	9.1065557	10034	10.8934443	10.0035184	161	9.9964816	43
18	9.1040246	9850	10.8959754	9.1075591	10013	10.8924409	10.0035345	162	9.9964655	42
19	9.1050096	9828	10.8949904	9.1085604	9990	10.8914396	10.0035507	163	9.9964493	41
20	9.1059924	9805	10.8940076	9.1095594	9968	10.8904406	10.0035670	163	9.9964330	40
21	9.1069729	9783	10.8930271	9.1105562	9946	10.8894438	10.0035833	163	9.9964167	39
22	9.1079512	9760	10.8920488	9.1115508	9923	10.8884492	10.0035996	163	9.9964004	38
23	9.1089272	9738	10.8910728	9.1125431	9902	10.8874569	10.0036159	164	9.9963841	37
24	9.1099010	9716	10.8900990	9.1135333	9880	10.8864667	10.0036323	164	9.9963677	36
25	9.1108726	9694	10.8891274	9.1145213	9859	10.8854787	10.0036487	165	9.9963513	35
26	9.1118420	9672	10.8881580	9.1155072	9837	10.8844928	10.0036652	165	9.9963348	34
27	9.1128092	9650	10.8871908	9.1164909	9815	10.8835091	10.0036817	165	9.9963183	33
28	9.1137742	9628	10.8862258	9.1174724	9794	10.8825276	10.0036982	166	9.9963018	32
29	9.1147370	9607	10.8852630	9.1184518	9773	10.8815482	10.0037148	166	9.9962852	31
30	9.1156977	9585	10.8843023	9.1194291	9752	10.8805709	10.0037314	167	9.9962686	30
31	9.1166562	9563	10.8833438	9.1204043	9730	10.8795957	10.0037481	167	9.9962519	29
32	9.1176125	9542	10.8823875	9.1213773	9709	10.8786227	10.0037648	167	9.9962352	28
33	9.1185667	9521	10.8814333	9.1223482	9689	10.8776518	10.0037815	168	9.9962185	27
34	9.1195188	9500	10.8804812	9.1233171	9668	10.8766829	10.0037983	168	9.9962017	26
35	9.1204688	9479	10.8795312	9.1242839	9647	10.8757161	10.0038151	168	9.9961849	25
36	9.1214167	9457	10.8785833	9.1252486	9626	10.8747514	10.0038319	169	9.9961681	24
37	9.1223624	9437	10.8776376	9.1262112	9606	10.8737888	10.0038488	169	9.9961512	23
38	9.1233061	9416	10.8766939	9.1271718	9585	10.8728282	10.0038657	169	9.9961343	22
39	9.1242477	9395	10.8757523	9.1281303	9565	10.8718697	10.0038826	170	9.9961174	21
40	9.1251872	9374	10.8748128	9.1290868	9545	10.8709132	10.0038996	170	9.9961004	20
41	9.1261246	9354	10.8738754	9.1300413	9524	10.8699587	10.0039166	171	9.9960834	19
42	9.1270600	9334	10.8729400	9.1309937	9505	10.8690063	10.0039337	171	9.9960663	18
43	9.1279934	9313	10.8720066	9.1319442	9484	10.8680558	10.0039508	171	9.9960492	17
44	9.1289247	9292	10.8710753	9.1328926	9465	10.8671074	10.0039679	172	9.9960321	16
45	9.1298539	9273	10.8701461	9.1338391	9444	10.8661609	10.0039851	172	9.9960149	15
46	9.1307812	9252	10.8692188	9.1347835	9425	10.8652165	10.0040023	173	9.9959977	14
47	9.1317064	9233	10.8682936	9.1357260	9405	10.8642740	10.0040196	173	9.9959804	13
48	9.1326297	9212	10.8673703	9.1366665	9386	10.8633335	10.0040369	173	9.9959631	12
49	9.1335509	9193	10.8664491	9.1376051	9366	10.8623949	10.0040542	174	9.9959458	11
50	9.1344702	9173	10.8655298	9.1385417	9347	10.8614583	10.0040716	173	9.9959284	10
51	9.1353875	9153	10.8646125	9.1394764	9328	10.8605236	10.0040889	175	9.9959111	9
52	9.1363028	9133	10.8636972	9.1404092	9308	10.8595908	10.0041064	175	9.9958936	8
53	9.1372161	9114	10.8627839	9.1413400	9289	10.8586600	10.0041239	175	9.9958761	7
54	9.1381275	9095	10.8618725	9.1422689	9270	10.8577311	10.0041414	175	9.9958586	6
55	9.1390370	9075	10.8609630	9.1431959	9251	10.8568041	10.0041589	176	9.9958411	5
56	9.1399445	9056	10.8600555	9.1441210	9232	10.8558790	10.0041765	176	9.9958235	4
57	9.1408501	9036	10.8591499	9.1450442	9213	10.8549558	10.0041941	177	9.9958059	3
58	9.1417537	9018	10.8582463	9.1459655	9194	10.8540345	10.0042118	177	9.9957882	2
59	9.1426555	8998	10.8573445	9.1468849	9176	10.8531151	10.0042295	177	9.9957705	1
60	9.1435553		10.8564447	9.1478025		10.8521975	10.0042472		9.9957528	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
97°										83°

8° 171°

/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.1435553	8979	10.8564447	9.1478025	9157	10.8521975	10.0042472	178	9.9957528	60
1	9.1444532	8961	10.8555468	9.1487182	9139	10.8512818	10.0042650	178	9.9957350	59
2	9.1453493	8942	10.8546507	9.1496321	9120	10.8503679	10.0042828	179	9.9957172	58
3	9.1462435	8923	10.8537565	9.1505441	9102	10.8494559	10.0043007	178	9.9956993	57
4	9.1471358	8904	10.8528642	9.1514543	9084	10.8485457	10.0043185	180	9.9956815	56
5	9.1480262	8886	10.8519738	9.1523627	9065	10.8476373	10.0043365	179	9.9956635	55
6	9.1489148	8867	10.8510852	9.1532692	9047	10.8467308	10.0043544	180	9.9956456	54
7	9.1498015	8849	10.8501985	9.1541739	9030	10.8458261	10.0043724	181	9.9956276	53
8	9.1506864	8830	10.8493136	9.1550769	9011	10.8449231	10.0043905	180	9.9956095	52
9	9.1515694	8813	10.8484306	9.1559780	8993	10.8440220	10.0044085	181	9.9955915	51
10	9.1524507	8794	10.8475493	9.1568773	8975	10.8431227	10.0044266	182	9.9955734	50
11	9.1533301	8775	10.8466699	9.1577748	8958	10.8422252	10.0044448	182	9.9955552	49
12	9.1542076	8758	10.8457924	9.1586706	8940	10.8413294	10.0044630	182	9.9955370	48
13	9.1550834	8740	10.8449166	9.1595646	8923	10.8404354	10.0044812	183	9.9955188	47
14	9.1559574	8722	10.8440426	9.1604569	8904	10.8395431	10.0044995	183	9.9955005	46
15	9.1568296	8704	10.8431704	9.1613473	8888	10.8386527	10.0045178	183	9.9954822	45
16	9.1577000	8686	10.8423000	9.1622361	8870	10.8377639	10.0045361	184	9.9954639	44
17	9.1585686	8668	10.8414314	9.1631231	8852	10.8368769	10.0045545	184	9.9954455	43
18	9.1594354	8651	10.8405646	9.1640083	8836	10.8359917	10.0045729	184	9.9954271	42
19	9.1603005	8634	10.8396995	9.1648919	8818	10.8351081	10.0045913	185	9.9954087	41
20	9.1611639	8615	10.8388361	9.1657737	8801	10.8342263	10.0046098	185	9.9953902	40
21	9.1620254	8599	10.8379746	9.1666538	8784	10.8333462	10.0046283	186	9.9953717	39
22	9.1628853	8581	10.8371147	9.1675322	8767	10.8324678	10.0046469	186	9.9953531	38
23	9.1637434	8564	10.8362566	9.1684089	8750	10.8315911	10.0046655	186	9.9953345	37
24	9.1645998	8546	10.8354002	9.1692839	8733	10.8307161	10.0046841	187	9.9953159	36
25	9.1654544	8530	10.8345456	9.1701572	8717	10.8298428	10.0047028	187	9.9952972	35
26	9.1663074	8512	10.8336926	9.1710289	8700	10.8289711	10.0047215	188	9.9952785	34
27	9.1671586	8495	10.8328414	9.1718989	8683	10.8281011	10.0047403	188	9.9952597	33
28	9.1680081	8478	10.8319919	9.1727672	8666	10.8272328	10.0047591	188	9.9952409	32
29	9.1688559	8462	10.8311441	9.1736338	8650	10.8263662	10.0047779	188	9.9952221	31
30	9.1697021	8444	10.8302979	9.1744988	8634	10.8255012	10.0047967	189	9.9952033	30
31	9.1705465	8428	10.8294535	9.1753622	8617	10.8246378	10.0048156	190	9.9951844	29
32	9.1713893	8412	10.8286107	9.1762239	8601	10.8237761	10.0048346	190	9.9951654	28
33	9.1722305	8394	10.8277695	9.1770840	8585	10.8229160	10.0048536	190	9.9951464	27
34	9.1730699	8378	10.8269301	9.1779425	8568	10.8220575	10.0048726	190	9.9951274	26
35	9.1739077	8362	10.8260923	9.1787993	8553	10.8212007	10.0048916	191	9.9951084	25
36	9.1747439	8345	10.8252561	9.1796546	8536	10.8203454	10.0049107	191	9.9950893	24
37	9.1755784	8328	10.8244216	9.1805082	8520	10.8194918	10.0049298	192	9.9950702	23
38	9.1764112	8313	10.8235888	9.1813602	8504	10.8186398	10.0049490	192	9.9950510	22
39	9.1772425	8296	10.8227575	9.1822106	8489	10.8177894	10.0049682	192	9.9950318	21
40	9.1780721	8280	10.8219279	9.1830595	8473	10.8169405	10.0049874	193	9.9950126	20
41	9.1789001	8264	10.8210999	9.1839068	8457	10.8160932	10.0050067	193	9.9949933	19
42	9.1797265	8247	10.8202735	9.1847525	8441	10.8152475	10.0050260	194	9.9949740	18
43	9.1805512	8232	10.8194488	9.1855966	8426	10.8144034	10.0050454	194	9.9949546	17
44	9.1813744	8216	10.8186256	9.1864392	8410	10.8135608	10.0050648	194	9.9949352	16
45	9.1821960	8200	10.8178040	9.1872802	8394	10.8127198	10.0050842	194	9.9949158	15
46	9.1830160	8184	10.8169840	9.1881196	8379	10.8118804	10.0051036	195	9.9948964	14
47	9.1838344	8168	10.8161656	9.1889575	8364	10.8110425	10.0051231	196	9.9948769	13
48	9.1846512	8153	10.8153488	9.1897939	8348	10.8102061	10.0051427	196	9.9948573	12
49	9.1854665	8137	10.8145335	9.1906287	8334	10.8093713	10.0051623	196	9.9948377	11
50	9.1862802	8121	10.8137198	9.1914621	8318	10.8085379	10.0051819	196	9.9948181	10
51	9.1870923	8106	10.8129077	9.1922939	8302	10.8077061	10.0052015	197	9.9947985	9
52	9.1879029	8091	10.8120971	9.1931241	8288	10.8068759	10.0052212	197	9.9947788	8
53	9.1887120	8075	10.8112880	9.1939529	8273	10.8060471	10.0052409	198	9.9947591	7
54	9.1895195	8059	10.8104805	9.1947802	8257	10.8052198	10.0052607	198	9.9947393	6
55	9.1903254	8045	10.8096746	9.1956059	8243	10.8043941	10.0052805	198	9.9947195	5
56	9.1911299	8029	10.8088701	9.1964302	8228	10.8035698	10.0053003	199	9.9946997	4
57	9.1919328	8014	10.8080672	9.1972530	8213	10.8027470	10.0053202	199	9.9946798	3
58	9.1927342	7999	10.8072658	9.1980743	8198	10.8019257	10.0053401	200	9.9946599	2
59	9.1935341	7983	10.8064659	9.1988941	8184	10.8011059	10.0053601	200	9.9946399	1
60	9.1943324		10.8056676	9.1997125		10.8002875	10.0053801		9.9946199	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/

98° 81°

9°										170°
/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.1943324		10.8056676	9.1997125		10.8002875	10.0053801		9.9946199	60
1	9.1951293	7969	10.8048707	9.2005294	8169	10.7994706	10.0054001	200	9.9945999	59
2	9.1959247	7954	10.8040753	9.2013449	8155	10.7986551	10.0054202	201	9.9945798	58
3	9.1967186	7939	10.8032814	9.2021588	8139	10.7978412	10.0054403	201	9.9945597	57
4	9.1975110	7924	10.8024890	9.2029714	8126	10.7970286	10.0054604	202	9.9945396	56
5	9.1983019	7909	10.8016981	9.2037825	8111	10.7962175	10.0054806	202	9.9945194	55
6	9.1990913	7894	10.8009087	9.2045922	8097	10.7954078	10.0055008	203	9.9944992	54
7	9.1998793	7880	10.8001207	9.2054004	8082	10.7945996	10.0055211	202	9.9944789	53
8	9.2006658	7865	10.7993342	9.2062072	8068	10.7937928	10.0055413	204	9.9944587	52
9	9.2014509	7851	10.7985491	9.2070126	8054	10.7929874	10.0055617	203	9.9944383	51
10	9.2022345	7836	10.7977655	9.2078165	8039	10.7921835	10.0055820	205	9.9944180	50
11	9.2030167	7822	10.7969833	9.2086191	8026	10.7913809	10.0056025	204	9.9943975	49
12	9.2037974	7807	10.7962026	9.2094203	8012	10.7905797	10.0056229	205	9.9943771	48
13	9.2045766	7792	10.7954234	9.2102200	7997	10.7897800	10.0056434	205	9.9943566	47
14	9.2053545	7779	10.7946455	9.2110184	7984	10.7889816	10.0056639	205	9.9943361	46
15	9.2061309	7764	10.7938691	9.2118153	7969	10.7881847	10.0056844	206	9.9943156	45
16	9.2069059	7750	10.7930941	9.2126109	7956	10.7873891	10.0057050	207	9.9942950	44
17	9.2076795	7736	10.7923205	9.2134051	7942	10.7865949	10.0057257	206	9.9942743	43
18	9.2084516	7721	10.7915484	9.2141980	7929	10.7858020	10.0057463	207	9.9942537	42
19	9.2092224	7708	10.7907776	9.2149894	7914	10.7850106	10.0057670	208	9.9942330	41
20	9.2099917	7693	10.7900083	9.2157795	7901	10.7842205	10.0057878	208	9.9942122	40
21	9.2107597	7680	10.7892403	9.2165683	7888	10.7834317	10.0058086	208	9.9941914	39
22	9.2115263	7666	10.7884737	9.2173556	7873	10.7826444	10.0058294	208	9.9941706	38
23	9.2122914	7651	10.7877086	9.2181417	7861	10.7818583	10.0058502	209	9.9941498	37
24	9.2130552	7638	10.7869448	9.2189264	7847	10.7810736	10.0058711	210	9.9941289	36
25	9.2138176	7624	10.7861824	9.2197097	7833	10.7802903	10.0058921	209	9.9941079	35
26	9.2145787	7611	10.7854213	9.2204917	7820	10.7795083	10.0059130	211	9.9940870	34
27	9.2153384	7597	10.7846616	9.2212724	7807	10.7787276	10.0059341	210	9.9940659	33
28	9.2160967	7583	10.7839033	9.2220518	7794	10.7779482	10.0059551	211	9.9940449	32
29	9.2168536	7569	10.7831464	9.2228298	7780	10.7771702	10.0059762	211	9.9940238	31
30	9.2176092	7556	10.7823908	9.2236065	7767	10.7763935	10.0059973	212	9.9940027	30
31	9.2183635	7543	10.7816365	9.2243819	7754	10.7756181	10.0060185	212	9.9939815	29
32	9.2191164	7529	10.7808836	9.2251561	7742	10.7748439	10.0060397	212	9.9939603	28
33	9.2198680	7516	10.7801320	9.2259289	7728	10.7740711	10.0060609	213	9.9939391	27
34	9.2206182	7502	10.7793818	9.2267004	7715	10.7732996	10.0060822	213	9.9939178	26
35	9.2213671	7489	10.7786329	9.2274706	7702	10.7725294	10.0061035	213	9.9938965	25
36	9.2221147	7476	10.7778853	9.2282395	7689	10.7717605	10.0061248	214	9.9938752	24
37	9.2228609	7462	10.7771391	9.2290071	7676	10.7709929	10.0061462	214	9.9938538	23
38	9.2236059	7450	10.7763941	9.2297735	7664	10.7702265	10.0061676	215	9.9938324	22
39	9.2243495	7436	10.7756505	9.2305386	7651	10.7694614	10.0061891	215	9.9938109	21
40	9.2250918	7423	10.7749082	9.2313024	7638	10.7686976	10.0062106	215	9.9937894	20
41	9.2258328	7410	10.7741672	9.2320650	7626	10.7679350	10.0062321	216	9.9937679	19
42	9.2265725	7397	10.7734275	9.2328262	7612	10.7671738	10.0062537	216	9.9937463	18
43	9.2273110	7385	10.7726890	9.2335863	7601	10.7664137	10.0062753	217	9.9937247	17
44	9.2280481	7371	10.7719519	9.2343451	7588	10.7656549	10.0062970	217	9.9937030	16
45	9.2287839	7358	10.7712161	9.2351026	7575	10.7648974	10.0063187	217	9.9936813	15
46	9.2295185	7346	10.7704815	9.2358589	7563	10.7641411	10.0063404	218	9.9936596	14
47	9.2302518	7333	10.7697482	9.2366139	7550	10.7633861	10.0063622	218	9.9936378	13
48	9.2309838	7320	10.7690162	9.2373678	7539	10.7626322	10.0063840	218	9.9936160	12
49	9.2317145	7307	10.7682855	9.2381203	7525	10.7618797	10.0064058	219	9.9935942	11
50	9.2324440	7295	10.7675560	9.2388717	7514	10.7611283	10.0064277	219	9.9935723	10
51	9.2331722	7282	10.7668278	9.2396218	7501	10.7603782	10.0064496	219	9.9935504	9
52	9.2338992	7270	10.7661008	9.2403708	7490	10.7596292	10.0064715	220	9.9935285	8
53	9.2346249	7257	10.7653751	9.2411185	7477	10.7588815	10.0064935	221	9.9935065	7
54	9.2353494	7245	10.7646506	9.2418650	7465	10.7581350	10.0065156	220	9.9934844	6
55	9.2360726	7232	10.7639274	9.2426103	7453	10.7573897	10.0065376	221	9.9934624	5
56	9.2367946	7220	10.7632054	9.2433543	7440	10.7566457	10.0065597	222	9.9934403	4
57	9.2375153	7207	10.7624847	9.2440972	7429	10.7559028	10.0065819	222	9.9934181	3
58	9.2382349	7196	10.7617651	9.2448389	7417	10.7551611	10.0066041	222	9.9933959	2
59	9.2389532	7183	10.7610468	9.2455794	7405	10.7544206	10.0066263	222	9.9933737	1
60	9.2396702	7170	10.7603298	9.2463188	7394	10.7536812	10.0066485	222	9.9933515	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/
99°										80°

10°										169°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.2396702		10.7603298	9.2463188		10.7536812	10.0066485		9.9933515	60
1	9.2403861	7159	10.7596139	9.2470569	7381	10.7529431	10.0066708	223	9.9933292	59
2	9.2411007	7146	10.7588993	9.2477939	7370	10.7522061	10.0066932	224	9.9933068	58
3	9.2418141	7134	10.7581859	9.2485297	7358	10.7514703	10.0067155	223	9.9932845	57
4	9.2425264	7123	10.7574736	9.2492643	7346	10.7507357	10.0067379	224	9.9932621	56
5	9.2432374	7110	10.7567626	9.2499978	7335	10.7500022	10.0067604	225	9.9932396	55
6	9.2439472	7098	10.7560528	9.2507301	7323	10.7492699	10.0067829	225	9.9932171	54
7	9.2446558	7086	10.7553442	9.2514612	7311	10.7485388	10.0068054	225	9.9931946	53
8	9.2453632	7074	10.7546368	9.2521912	7300	10.7478088	10.0068280	226	9.9931720	52
9	9.2460695	7063	10.7539305	9.2529200	7288	10.7470800	10.0068506	226	9.9931494	51
10	9.2467746	7051	10.7532254	9.2536477	7277	10.7463523	10.0068732	226	9.9931268	50
11	9.2474784	7038	10.7525216	9.2543743	7266	10.7456257	10.0068959	227	9.9931041	49
12	9.2481811	7027	10.7518189	9.2550997	7254	10.7449003	10.0069186	227	9.9930814	48
13	9.2488827	7016	10.7511173	9.2558240	7243	10.7441760	10.0069413	227	9.9930587	47
14	9.2495830	7003	10.7504170	9.2565472	7232	10.7434528	10.0069641	228	9.9930359	46
15	9.2502822	6992	10.7497178	9.2572692	7220	10.7427308	10.0069869	228	9.9930131	45
16	9.2509803	6981	10.7490197	9.2579901	7209	10.7420099	10.0070098	229	9.9929902	44
17	9.2516772	6969	10.7483228	9.2587099	7198	10.7412901	10.0070327	229	9.9929673	43
18	9.2523729	6957	10.7476271	9.2594285	7186	10.7405715	10.0070556	229	9.9929444	42
19	9.2530675	6946	10.7469325	9.2601461	7176	10.7398539	10.0070786	230	9.9929214	41
20	9.2537609	6934	10.7462391	9.2608625	7164	10.7391375	10.0071016	230	9.9928984	40
21	9.2544532	6923	10.7455468	9.2615779	7154	10.7384221	10.0071247	231	9.9928753	39
22	9.2551444	6912	10.7448556	9.2622921	7142	10.7377079	10.0071478	231	9.9928522	38
23	9.2558344	6900	10.7441656	9.2630053	7132	10.7369947	10.0071709	231	9.9928291	37
24	9.2565233	6889	10.7434767	9.2637173	7120	10.7362827	10.0071941	232	9.9928059	36
25	9.2572110	6877	10.7427890	9.2644283	7110	10.7355717	10.0072173	232	9.9927827	35
26	9.2578977	6867	10.7421023	9.2651382	7099	10.7348618	10.0072405	232	9.9927595	34
27	9.2585832	6855	10.7414168	9.2658470	7088	10.7341530	10.0072638	233	9.9927362	33
28	9.2592676	6844	10.7407324	9.2665547	7077	10.7334453	10.0072871	233	9.9927129	32
29	9.2599509	6833	10.7400491	9.2672613	7066	10.7327387	10.0073105	234	9.9926895	31
30	9.2606330	6821	10.7393670	9.2679669	7056	10.7320331	10.0073339	234	9.9926661	30
31	9.2613141	6811	10.7386859	9.2686714	7045	10.7313286	10.0073573	234	9.9926427	29
32	9.2619941	6800	10.7380059	9.2693749	7035	10.7306251	10.0073808	235	9.9926192	28
33	9.2626729	6788	10.7373271	9.2700772	7023	10.7299228	10.0074043	235	9.9925957	27
34	9.2633507	6778	10.7366493	9.2707786	7014	10.7292214	10.0074278	235	9.9925722	26
35	9.2640274	6767	10.7359726	9.2714788	7002	10.7285212	10.0074514	236	9.9925486	25
36	9.2647030	6756	10.7352970	9.2721780	6992	10.7278220	10.0074750	236	9.9925250	24
37	9.2653775	6745	10.7346225	9.2728762	6982	10.7271238	10.0074987	237	9.9925013	23
38	9.2660509	6734	10.7339491	9.2735733	6971	10.7264267	10.0075224	237	9.9924776	22
39	9.2667232	6723	10.7332768	9.2742694	6961	10.7257306	10.0075461	237	9.9924539	21
40	9.2673945	6713	10.7326055	9.2749644	6950	10.7250356	10.0075699	238	9.9924301	20
41	9.2680647	6702	10.7319353	9.2756584	6940	10.7243416	10.0075937	238	9.9924063	19
42	9.2687338	6691	10.7312662	9.2763514	6930	10.7236486	10.0076176	239	9.9923824	18
43	9.2694019	6681	10.7305981	9.2770434	6920	10.7229566	10.0076415	239	9.9923585	17
44	9.2700689	6670	10.7299311	9.2777343	6909	10.7222657	10.0076654	239	9.9923346	16
45	9.2707348	6659	10.7292652	9.2784242	6899	10.7215758	10.0076894	240	9.9923106	15
46	9.2713997	6649	10.7286003	9.2791131	6889	10.7208869	10.0077134	240	9.9922866	14
47	9.2720635	6638	10.7279365	9.2798009	6878	10.7201991	10.0077374	240	9.9922626	13
48	9.2727263	6628	10.7272737	9.2804878	6869	10.7195122	10.0077615	241	9.9922385	12
49	9.2733880	6617	10.7266120	9.2811736	6858	10.7188264	10.0077856	241	9.9922144	11
50	9.2740487	6607	10.7259513	9.2818585	6849	10.7181415	10.0078098	242	9.9921902	10
51	9.2747083	6596	10.7252917	9.2825423	6838	10.7174577	10.0078340	242	9.9921660	9
52	9.2753669	6586	10.7246331	9.2832251	6828	10.7167749	10.0078582	242	9.9921418	8
53	9.2760245	6576	10.7239755	9.2839070	6819	10.7160930	10.0078825	243	9.9921175	7
54	9.2766811	6566	10.7233189	9.2845878	6808	10.7154122	10.0079068	243	9.9920932	6
55	9.2773366	6555	10.7226634	9.2852677	6799	10.7147323	10.0079311	243	9.9920689	5
56	9.2779911	6545	10.7220089	9.2859466	6789	10.7140534	10.0079555	244	9.9920445	4
57	9.2786445	6534	10.7213555	9.2866245	6779	10.7133755	10.0079799	244	9.9920201	3
58	9.2792970	6525	10.7207030	9.2873014	6769	10.7126986	10.0080044	245	9.9919956	2
59	9.2799484	6514	10.7200516	9.2879773	6759	10.7120227	10.0080289	245	9.9919711	1
60	9.2805988	6504	10.7194012	9.2886523	6750	10.7113477	10.0080534	245	9.9919466	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
100°										79°

11° 168°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.2308988	6495	10.7194012	9.2886523	6740	10.7113477	10.0080534	246	9.9919466	60
1	9.2312483	6484	10.7187517	9.2893263	6730	10.7106737	10.0080780	246	9.9919220	59
2	9.2318967	6474	10.7181033	9.2899993	6720	10.7100007	10.0081026	247	9.9918974	58
3	9.2325441	6464	10.7174559	9.2906713	6711	10.7093287	10.0081273	247	9.9918727	57
4	9.2331905	6454	10.7168095	9.2913424	6702	10.7086576	10.0081520	247	9.9918480	56
5	9.2338359	6444	10.7161641	9.2920126	6691	10.7079874	10.0081767	247	9.9918233	55
6	9.2344803	6434	10.7155197	9.2926817	6683	10.7073183	10.0082014	249	9.9917986	54
7	9.2351237	6424	10.7148763	9.2933500	6672	10.7066500	10.0082263	248	9.9917737	53
8	9.2357661	6415	10.7142339	9.2940172	6664	10.7059828	10.0082511	249	9.9917489	52
9	9.2364076	6404	10.7135924	9.2946836	6653	10.7053164	10.0082760	249	9.9917240	51
10	9.2370480	6395	10.7129520	9.2953489	6645	10.7046511	10.0083009	250	9.9916991	50
11	9.2376875	6385	10.7123125	9.2960134	6635	10.7039866	10.0083259	249	9.9916741	49
12	9.2383260	6376	10.7116740	9.2966769	6626	10.7033231	10.0083508	251	9.9916492	48
13	9.2389636	6365	10.7110364	9.2973395	6616	10.7026605	10.0083759	251	9.9916241	47
14	9.2396001	6356	10.7103999	9.2980011	6607	10.7019989	10.0084010	251	9.9915990	46
15	9.2402357	6347	10.7097643	9.2986618	6598	10.7013382	10.0084261	251	9.9915739	45
16	9.2408704	6336	10.7091296	9.2993216	6588	10.7006784	10.0084512	252	9.9915488	44
17	9.2415040	6327	10.7084960	9.2999804	6579	10.7000196	10.0084764	252	9.9915236	43
18	9.2421367	6318	10.7078633	9.3006383	6571	10.6993617	10.0085016	253	9.9914984	42
19	9.2427685	6308	10.7072315	9.3012954	6560	10.6987046	10.0085269	253	9.9914731	41
20	9.2433993	6298	10.7066007	9.3019514	6552	10.6980486	10.0085522	253	9.9914478	40
21	9.2440291	6289	10.7059709	9.3026066	6543	10.6973934	10.0085775	254	9.9914225	39
22	9.2446580	6279	10.7053420	9.3032609	6534	10.6967391	10.0086029	254	9.9913971	38
23	9.2452859	6270	10.7047141	9.3039143	6524	10.6960857	10.0086283	255	9.9913717	37
24	9.2459129	6261	10.7040871	9.3045667	6516	10.6954333	10.0086538	255	9.9913462	36
25	9.2465390	6251	10.7034610	9.3052183	6506	10.6947817	10.0086793	255	9.9913207	35
26	9.2471641	6242	10.7028359	9.3058689	6498	10.6941311	10.0087048	256	9.9912952	34
27	9.2477883	6233	10.7022117	9.3065187	6488	10.6934813	10.0087304	256	9.9912696	33
28	9.2484116	6223	10.7015884	9.3071675	6480	10.6928325	10.0087560	256	9.9912440	32
29	9.2490339	6214	10.7009661	9.3078155	6471	10.6921845	10.0087816	257	9.9912184	31
30	9.2496553	6205	10.7003447	9.3084626	6462	10.6915374	10.0088073	257	9.9911927	30
31	9.3002758	6195	10.6997242	9.3091088	6453	10.6908912	10.0088330	258	9.9911670	29
32	9.3008953	6187	10.6991047	9.3097541	6444	10.6902459	10.0088588	258	9.9911412	28
33	9.3015140	6177	10.6984860	9.3103985	6436	10.6896015	10.0088846	258	9.9911154	27
34	9.3021317	6168	10.6978683	9.3110421	6427	10.6889579	10.0089104	259	9.9910896	26
35	9.3027485	6159	10.6972515	9.3116848	6418	10.6883152	10.0089363	259	9.9910637	25
36	9.3033644	6150	10.6966356	9.3123266	6409	10.6876734	10.0089622	259	9.9910378	24
37	9.3039794	6140	10.6960206	9.3129675	6401	10.6870325	10.0089881	260	9.9910119	23
38	9.3045934	6132	10.6954066	9.3136076	6392	10.6863924	10.0090141	261	9.9909859	22
39	9.3052066	6123	10.6947934	9.3142468	6383	10.6857532	10.0090402	260	9.9909598	21
40	9.3058189	6114	10.6941811	9.3148851	6375	10.6851149	10.0090662	261	9.9909338	20
41	9.3064303	6104	10.6935697	9.3155226	6366	10.6844774	10.0090923	262	9.9909077	19
42	9.3070407	6096	10.6929593	9.3161592	6358	10.6838408	10.0091185	262	9.9908815	18
43	9.3076503	6087	10.6923497	9.3167950	6349	10.6832050	10.0091447	262	9.9908553	17
44	9.3082590	6078	10.6917410	9.3174299	6341	10.6825701	10.0091709	262	9.9908291	16
45	9.3088668	6069	10.6911332	9.3180640	6332	10.6819360	10.0091971	263	9.9908029	15
46	9.3094737	6061	10.6905263	9.3186972	6323	10.6813028	10.0092234	264	9.9907766	14
47	9.3100798	6051	10.6899202	9.3193295	6316	10.6806705	10.0092498	263	9.9907502	13
48	9.3106849	6043	10.6893151	9.3199611	6307	10.6800389	10.0092761	265	9.9907239	12
49	9.3112892	6034	10.6887108	9.3205918	6298	10.6794082	10.0093026	264	9.9906974	11
50	9.3118926	6025	10.6881074	9.3212216	6290	10.6787784	10.0093290	265	9.9906710	10
51	9.3124951	6017	10.6875049	9.3218506	6282	10.6781494	10.0093555	265	9.9906445	9
52	9.3130968	6008	10.6869032	9.3224788	6273	10.6775212	10.0093820	266	9.9906180	8
53	9.3136976	5999	10.6863024	9.3231061	6266	10.6768939	10.0094086	266	9.9905914	7
54	9.3142975	5990	10.6857025	9.3237327	6257	10.6762673	10.0094352	266	9.9905648	6
55	9.3148965	5982	10.6851035	9.3243584	6248	10.6756416	10.0094618	267	9.9905382	5
56	9.3154947	5974	10.6845053	9.3249832	6241	10.6750168	10.0094885	267	9.9905115	4
57	9.3160921	5964	10.6839079	9.3256073	6232	10.6743927	10.0095152	268	9.9904848	3
58	9.3166885	5956	10.6833115	9.3262305	6224	10.6737695	10.0095420	268	9.9904580	2
59	9.3172841	5948	10.6827159	9.3268529	6216	10.6731471	10.0095688	268	9.9904312	1
60	9.3178789		10.6821211	9.3274745		10.6725255	10.0095956		9.9904044	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

101° 78°

12°										167°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.3178789		10.6821211	9.3274745		10.6725255	10.0095956		9.9904044	60
1	9.3184728	5939	10.6815272	9.3280953	6208	10.6719047	10.0096225	269	9.9903775	59
2	9.3190659	5931	10.6809341	9.3287153	6200	10.6712847	10.0096494	269	9.9903506	58
3	9.3196581	5922	10.6803419	9.3293345	6192	10.6706655	10.0096763	269	9.9903237	57
4	9.3202495	5914	10.6797505	9.3299528	6183	10.6700472	10.0097033	270	9.9902967	56
5	9.3208400	5905	10.6791600	9.3305704	6176	10.6694296	10.0097303	270	9.9902697	55
6	9.3214297	5897	10.6785703	9.3311872	6168	10.6688128	10.0097574	271	9.9902426	54
		5889			6159			271		
7	9.3220186		10.6779814	9.3318031		10.6681969	10.0097845		9.9902155	53
8	9.3226066	5880	10.6773934	9.3324183	6152	10.6675817	10.0098117	272	9.9901883	52
9	9.3231938	5872	10.6768062	9.3330327	6144	10.6669673	10.0098388	271	9.9901612	51
10	9.3237802	5864	10.6762198	9.3336463	6136	10.6663537	10.0098661	273	9.9901339	50
11	9.3243657	5855	10.6756343	9.3342591	6128	10.6657409	10.0098933	272	9.9901067	49
12	9.3249505	5848	10.6750495	9.3348711	6120	10.6651289	10.0099206	273	9.9900794	48
		5839			6112			273		
13	9.3255344		10.6744656	9.3354823		10.6645177	10.0099479		9.9900521	47
14	9.3261174	5830	10.6738826	9.3360927	6104	10.6639073	10.0099753	274	9.9900247	46
15	9.3266997	5823	10.6733003	9.3367024	6097	10.6632976	10.0100027	274	9.9899973	45
16	9.3272811	5814	10.6727189	9.3373113	6089	10.6626887	10.0100302	275	9.9899698	44
17	9.3278617	5806	10.6721383	9.3379194	6081	10.6620906	10.0100577	275	9.9899423	43
18	9.3284416	5799	10.6715584	9.3385267	6073	10.6614733	10.0100852	275	9.9899148	42
		5790			6066			275		
19	9.3290206		10.6709794	9.3391333		10.6608667	10.0101127		9.9898873	41
20	9.3295988	5782	10.6704012	9.3397391	6058	10.6602609	10.0101403	276	9.9898597	40
21	9.3301761	5773	10.6698239	9.3403441	6050	10.6596559	10.0101680	277	9.9898320	39
22	9.3307527	5766	10.6692473	9.3409484	6043	10.6590516	10.0101957	277	9.9898043	38
23	9.3313285	5758	10.6686715	9.3415519	6035	10.6584481	10.0102234	277	9.9897766	37
24	9.3319035	5750	10.6680965	9.3421546	6027	10.6578454	10.0102511	277	9.9897489	36
		5742			6020			278		
25	9.3324777		10.6675223	9.3427566		10.6572434	10.0102789		9.9897211	35
26	9.3330511	5734	10.6669489	9.3433578	6012	10.6566422	10.0103068	279	9.9896932	34
27	9.3336237	5726	10.6663763	9.3439583	6005	10.6560417	10.0103346	278	9.9896654	33
28	9.3341955	5718	10.6658045	9.3445580	5997	10.6554420	10.0103626	280	9.9896374	32
29	9.3347665	5710	10.6652335	9.3451570	5990	10.6548430	10.0103905	279	9.9896095	31
30	9.3353368	5703	10.6646632	9.3457552	5982	10.6542448	10.0104185	280	9.9895815	30
		5694			5975			280		
31	9.3359062		10.6640938	9.3463527		10.6536473	10.0104465		9.9895535	29
32	9.3364749	5687	10.6635251	9.3469494	5967	10.6530506	10.0104746	281	9.9895254	28
33	9.3370428	5679	10.6629572	9.3475454	5960	10.6524546	10.0105027	281	9.9894973	27
34	9.3376099	5671	10.6623901	9.3481407	5953	10.6518593	10.0105308	281	9.9894692	26
35	9.3381762	5663	10.6618238	9.3487352	5945	10.6512648	10.0105590	282	9.9894410	25
36	9.3387418	5656	10.6612582	9.3493290	5938	10.6506710	10.0105872	282	9.9894128	24
		5647			5930			283		
37	9.3393065		10.6606935	9.3499220		10.6500780	10.0106155		9.9893845	23
38	9.3398706	5641	10.6601294	9.3505143	5923	10.6494857	10.0106438	283	9.9893562	22
39	9.3404338	5632	10.6595662	9.3511059	5916	10.6488941	10.0106721	283	9.9893279	21
40	9.3409963	5625	10.6590037	9.3516968	5909	10.6483032	10.0107005	284	9.9892995	20
41	9.3415580	5617	10.6584420	9.3522869	5901	10.6477131	10.0107289	284	9.9892711	19
42	9.3421190	5610	10.6578810	9.3528763	5894	10.6471237	10.0107573	284	9.9892427	18
		5602			5887			285		
43	9.3426792		10.6573208	9.3534650		10.6465350	10.0107858		9.9892142	17
44	9.3432386	5594	10.6567614	9.3540530	5880	10.6459470	10.0108144	286	9.9891856	16
45	9.3437973	5587	10.6562027	9.3546402	5872	10.6453598	10.0108429	285	9.9891571	15
46	9.3443552	5579	10.6556448	9.3552267	5865	10.6447733	10.0108715	286	9.9891285	14
47	9.3449124	5572	10.6550876	9.3558126	5859	10.6441874	10.0109002	287	9.9890998	13
48	9.3454688	5564	10.6545312	9.3563977	5851	10.6436023	10.0109289	287	9.9890711	12
		5557			5844			287		
49	9.3460245		10.6539755	9.3569821		10.6430179	10.0109576		9.9890424	11
50	9.3465794	5549	10.6534206	9.3575658	5837	10.6424342	10.0109863	287	9.9890137	10
51	9.3471336	5542	10.6528664	9.3581487	5829	10.6418513	10.0110151	288	9.9889849	9
52	9.3476870	5534	10.6523130	9.3587310	5823	10.6412690	10.0110440	289	9.9889560	8
53	9.3482397	5527	10.6517603	9.3593126	5816	10.6406874	10.0110729	289	9.9889271	7
54	9.3487917	5520	10.6512083	9.3598935	5809	10.6401065	10.0111018	289	9.9888982	6
		5512			5801			289		
55	9.3493429		10.6506571	9.3604736		10.6395264	10.0111307		9.9888693	5
56	9.3498934	5505	10.6501066	9.3610531	5795	10.6389469	10.0111597	290	9.9888403	4
57	9.3504432	5498	10.6495568	9.3616319	5788	10.6383681	10.0111887	290	9.9888113	3
58	9.3509922	5490	10.6490078	9.3622100	5781	10.6377900	10.0112178	291	9.9887822	2
59	9.3515405	5483	10.6484595	9.3627874	5774	10.6372126	10.0112469	291	9.9887531	1
60	9.3520880	5475	10.6479120	9.3633641	5767	10.6366359	10.0112761	292	9.9887239	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
102°										77°

13°										166°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.3520880		10.6479120	9.3633641		10.6366359	10.0112761		9.9887239	60
1	9.3526349	5469	10.6473651	9.3639401	5760	10.6360599	10.0113053	292	9.9886947	59
2	9.3531810	5461	10.6468190	9.3645155	5754	10.6354845	10.0113345	292	9.9886655	58
3	9.3537264	5454	10.6462736	9.3650901	5746	10.6349099	10.0113637	292	9.9886363	57
4	9.3542710	5446	10.6457290	9.3656641	5740	10.6343359	10.0113930	293	9.9886070	56
5	9.3548150	5440	10.6451850	9.3662374	5733	10.6337626	10.0114224	294	9.9885776	55
6	9.3553582	5432	10.6446418	9.3668100	5726	10.6331900	10.0114518	294	9.9885482	54
7	9.3559007	5425	10.6440993	9.3673819	5719	10.6326181	10.0114812	294	9.9885188	53
8	9.3564426	5419	10.6435574	9.3679532	5713	10.6320468	10.0115106	294	9.9884894	52
9	9.3569836	5410	10.6430164	9.3685238	5706	10.6314762	10.0115401	295	9.9884599	51
10	9.3575240	5404	10.6424760	9.3690937	5699	10.6309063	10.0115697	296	9.9884303	50
11	9.3580637	5397	10.6419363	9.3696629	5692	10.6303371	10.0115992	295	9.9884008	49
12	9.3586027	5390	10.6413973	9.3702315	5686	10.6297685	10.0116288	296	9.9883712	48
13	9.3591409	5382	10.6408591	9.3707994	5679	10.6292006	10.0116585	297	9.9883415	47
14	9.3596785	5376	10.6403215	9.3713667	5673	10.6286333	10.0116882	297	9.9883118	46
15	9.3602154	5369	10.6397846	9.3719333	5666	10.6280667	10.0117179	297	9.9882821	45
16	9.3607515	5361	10.6392485	9.3724992	5659	10.6275008	10.0117477	298	9.9882523	44
17	9.3612870	5355	10.6387130	9.3730645	5653	10.6269355	10.0117775	298	9.9882225	43
18	9.3618217	5347	10.6381783	9.3736291	5646	10.6263709	10.0118073	298	9.9881927	42
19	9.3623558	5341	10.6376442	9.3741930	5639	10.6258070	10.0118372	299	9.9881628	41
20	9.3628892	5334	10.6371108	9.3747563	5633	10.6252437	10.0118671	299	9.9881329	40
21	9.3634219	5327	10.6365781	9.3753190	5627	10.6246810	10.0118971	300	9.9881029	39
22	9.3639539	5320	10.6360461	9.3758810	5620	10.6241190	10.0119271	300	9.9880729	38
23	9.3644852	5313	10.6355148	9.3764423	5613	10.6235577	10.0119571	300	9.9880429	37
24	9.3650158	5306	10.6349842	9.3770030	5607	10.6229970	10.0119872	301	9.9880128	36
25	9.3655458	5300	10.6344542	9.3775631	5601	10.6224369	10.0120173	301	9.9879827	35
26	9.3660750	5292	10.6339250	9.3781225	5594	10.6218775	10.0120475	302	9.9879525	34
27	9.3666036	5286	10.6333964	9.3786813	5588	10.6213187	10.0120777	302	9.9879223	33
28	9.3671315	5279	10.6328685	9.3792394	5581	10.6207606	10.0121079	302	9.9878921	32
29	9.3676587	5272	10.6323413	9.3797969	5575	10.6202031	10.0121382	303	9.9878618	31
30	9.3681853	5266	10.6318147	9.3803537	5568	10.6196463	10.0121685	303	9.9878315	30
31	9.3687111	5258	10.6312889	9.3809100	5563	10.6190900	10.0121988	303	9.9878012	29
32	9.3692363	5252	10.6307637	9.3814655	5555	10.6185345	10.0122292	304	9.9877708	28
33	9.3697608	5245	10.6302392	9.3820205	5550	10.6179795	10.0122596	304	9.9877404	27
34	9.3702847	5239	10.6297153	9.3825748	5543	10.6174252	10.0122901	305	9.9877099	26
35	9.3708079	5232	10.6291921	9.3831285	5537	10.6168715	10.0123206	305	9.9876794	25
36	9.3713304	5225	10.6286696	9.3836816	5531	10.6163184	10.0123512	306	9.9876488	24
37	9.3718523	5219	10.6281477	9.3842340	5524	10.6157660	10.0123817	305	9.9876183	23
38	9.3723735	5212	10.6276265	9.3847858	5518	10.6152142	10.0124124	307	9.9875876	22
39	9.3728940	5205	10.6271060	9.3853370	5512	10.6146630	10.0124430	306	9.9875570	21
40	9.3734139	5199	10.6265861	9.3858876	5506	10.6141124	10.0124737	307	9.9875263	20
41	9.3739331	5192	10.6260669	9.3864376	5500	10.6135624	10.0125045	308	9.9874955	19
42	9.3744517	5186	10.6255483	9.3869869	5493	10.6130131	10.0125352	307	9.9874648	18
43	9.3749696	5179	10.6250304	9.3875356	5487	10.6124644	10.0125661	309	9.9874339	17
44	9.3754868	5172	10.6245132	9.3880837	5481	10.6119163	10.0125969	308	9.9874031	16
45	9.3760034	5166	10.6239966	9.3886312	5475	10.6113688	10.0126278	309	9.9873722	15
46	9.3765194	5160	10.6234806	9.3891781	5469	10.6108219	10.0126587	309	9.9873413	14
47	9.3770347	5153	10.6229653	9.3897244	5463	10.6102756	10.0126897	310	9.9873103	13
48	9.3775493	5146	10.6224507	9.3902700	5456	10.6097300	10.0127207	310	9.9872793	12
49	9.3780633	5140	10.6219367	9.3908151	5451	10.6091849	10.0127518	311	9.9872482	11
50	9.3785767	5134	10.6214233	9.3913595	5444	10.6086405	10.0127829	311	9.9872171	10
51	9.3790894	5127	10.6209106	9.3919034	5439	10.6080966	10.0128140	311	9.9871860	9
52	9.3796015	5121	10.6203985	9.3924466	5432	10.6075534	10.0128451	311	9.9871549	8
53	9.3801129	5114	10.6198871	9.3929893	5427	10.6070107	10.0128764	313	9.9871236	7
54	9.3806237	5108	10.6193763	9.3935313	5420	10.6064687	10.0129076	312	9.9870924	6
55	9.3811339	5102	10.6188661	9.3940727	5414	10.6059273	10.0129389	313	9.9870611	5
56	9.3816434	5095	10.6183566	9.3946136	5409	10.6053864	10.0129702	313	9.9870298	4
57	9.3821523	5089	10.6178477	9.3951538	5402	10.6048462	10.0130016	314	9.9869984	3
58	9.3826605	5082	10.6173395	9.3956935	5397	10.6043065	10.0130330	314	9.9869670	2
59	9.3831682	5077	10.6168318	9.3962326	5391	10.6037674	10.0130644	314	9.9869356	1
60	9.3836752	5070	10.6163248	9.3967711	5385	10.6032289	10.0130959	315	9.9869041	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
103°										76°

14°										165°
/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.3836752		10.6163248	9.3967711		10.6032289	10.0130959		9.9869041	60
1	9.3841815	5063	10.6158185	9.3973089	5378	10.6026911	10.0131274	315	9.9868726	59
2	9.3846873	5058	10.6153127	9.3978463	5374	10.6021537	10.0131590	316	9.9868410	58
3	9.3851924	5051	10.6148076	9.3983830	5367	10.6016170	10.0131906	316	9.9868094	57
4	9.3856969	5045	10.6143031	9.3989191	5361	10.6010809	10.0132222	316	9.9867778	56
5	9.3862008	5039	10.6137992	9.3994547	5356	10.6005453	10.0132539	317	9.9867461	55
6	9.3867040	5032	10.6132960	9.3999896	5349	10.6000104	10.0132856	317	9.9867144	54
7	9.3872067	5027	10.6127933	9.4005240	5344	10.5994760	10.0133173	317	9.9866827	53
8	9.3877087	5020	10.6122913	9.4010578	5338	10.5989422	10.0133491	318	9.9866509	52
9	9.3882101	5014	10.6117899	9.4015910	5332	10.5984090	10.0133809	318	9.9866191	51
10	9.3887109	5008	10.6112891	9.4021237	5327	10.5978763	10.0134128	319	9.9865872	50
11	9.3892111	5002	10.6107889	9.4026558	5321	10.5973442	10.0134447	319	9.9865553	49
12	9.3897106	4995	10.6102894	9.4031873	5315	10.5968127	10.0134767	320	9.9865233	48
13	9.3902096	4990	10.6097904	9.4037182	5309	10.5962818	10.0135087	320	9.9864913	47
14	9.3907079	4983	10.6092921	9.4042486	5304	10.5957514	10.0135407	320	9.9864593	46
15	9.3912057	4978	10.6087943	9.4047784	5298	10.5952216	10.0135727	320	9.9864273	45
16	9.3917028	4971	10.6082972	9.4053076	5292	10.5946924	10.0136048	321	9.9863952	44
17	9.3921993	4965	10.6078007	9.4058363	5287	10.5941637	10.0136370	322	9.9863630	43
18	9.3926952	4959	10.6073048	9.4063644	5281	10.5936356	10.0136692	322	9.9863308	42
19	9.3931905	4953	10.6068095	9.4068919	5275	10.5931081	10.0137014	322	9.9862986	41
20	9.3936852	4947	10.6063148	9.4074189	5270	10.5925811	10.0137337	323	9.9862663	40
21	9.3941794	4942	10.6058206	9.4079453	5264	10.5920547	10.0137660	323	9.9862340	39
22	9.3946729	4935	10.6053271	9.4084712	5259	10.5915288	10.0137983	323	9.9862017	38
23	9.3951658	4929	10.6048342	9.4089965	5253	10.5910035	10.0138307	324	9.9861693	37
24	9.3956581	4923	10.6043419	9.4095212	5247	10.5904788	10.0138631	324	9.9861369	36
25	9.3961499	4918	10.6038501	9.4100454	5242	10.5899546	10.0138955	324	9.9861045	35
26	9.3966410	4911	10.6033590	9.4105690	5236	10.5894310	10.0139280	325	9.9860720	34
27	9.3971315	4905	10.6028685	9.4110921	5231	10.5889079	10.0139606	326	9.9860394	33
28	9.3976215	4900	10.6023785	9.4116146	5225	10.5883854	10.0139931	325	9.9860069	32
29	9.3981109	4894	10.6018891	9.4121366	5220	10.5878634	10.0140258	327	9.9859742	31
30	9.3985996	4887	10.6014004	9.4126581	5215	10.5873419	10.0140584	326	9.9859416	30
31	9.3990878	4882	10.6009122	9.4131789	5208	10.5868211	10.0140911	327	9.9859089	29
32	9.3995754	4876	10.6004246	9.4136993	5204	10.5863007	10.0141238	327	9.9858762	28
33	9.4000625	4871	10.5999375	9.4142191	5198	10.5857809	10.0141566	328	9.9858434	27
34	9.4005489	4864	10.5994511	9.4147383	5192	10.5852617	10.0141894	328	9.9858106	26
35	9.4010348	4859	10.5989652	9.4152570	5187	10.5847430	10.0142223	329	9.9857777	25
36	9.4015201	4853	10.5984799	9.4157752	5182	10.5842248	10.0142551	328	9.9857449	24
37	9.4020048	4847	10.5979952	9.4162928	5176	10.5837072	10.0142881	330	9.9857119	23
38	9.4024889	4841	10.5975111	9.4168099	5171	10.5831901	10.0143210	329	9.9856790	22
39	9.4029724	4835	10.5970276	9.4173265	5166	10.5826735	10.0143540	330	9.9856460	21
40	9.4034554	4830	10.5965446	9.4178425	5160	10.5821575	10.0143871	331	9.9856129	20
41	9.4039378	4824	10.5960622	9.4183580	5155	10.5816420	10.0144202	331	9.9855798	19
42	9.4044196	4818	10.5955804	9.4188729	5149	10.5811271	10.0144533	331	9.9855467	18
43	9.4049009	4813	10.5950991	9.4193874	5145	10.5806126	10.0144865	332	9.9855135	17
44	9.4053816	4807	10.5946184	9.4199013	5139	10.5800987	10.0145197	332	9.9854803	16
45	9.4058617	4801	10.5941383	9.4204146	5133	10.5795854	10.0145529	332	9.9854471	15
46	9.4063413	4796	10.5936587	9.4209275	5129	10.5790725	10.0145862	333	9.9854138	14
47	9.4068203	4790	10.5931797	9.4214398	5123	10.5785602	10.0146195	333	9.9853805	13
48	9.4072987	4784	10.5927013	9.4219515	5117	10.5780485	10.0146529	334	9.9853471	12
49	9.4077766	4779	10.5922234	9.4224628	5113	10.5775372	10.0146862	333	9.9853138	11
50	9.4082539	4773	10.5917461	9.4229735	5107	10.5770265	10.0147197	335	9.9852803	10
51	9.4087306	4767	10.5912694	9.4234838	5102	10.5765162	10.0147532	335	9.9852468	9
52	9.4092068	4762	10.5907932	9.4239935	5097	10.5760065	10.0147867	335	9.9852133	8
53	9.4096824	4756	10.5903176	9.4245026	5091	10.5754974	10.0148202	335	9.9851798	7
54	9.4101575	4751	10.5898425	9.4250113	5087	10.5749887	10.0148538	336	9.9851462	6
55	9.4106320	4745	10.5893680	9.4255194	5081	10.5744806	10.0148875	337	9.9851125	5
56	9.4111059	4739	10.5888941	9.4260271	5077	10.5739729	10.0149211	336	9.9850789	4
57	9.4115793	4734	10.5884207	9.4265342	5071	10.5734658	10.0149548	337	9.9850452	3
58	9.4120522	4729	10.5879478	9.4270408	5066	10.5729592	10.0149886	338	9.9850114	2
59	9.4125245	4723	10.5874755	9.4275469	5061	10.5724531	10.0150224	338	9.9849776	1
60	9.4129962	4717	10.5870038	9.4280525	5056	10.5719475	10.0150562	338	9.9849438	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/
104°										75°

15° 164°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.4129962	4712	10.5870038	9.4280525	5050	10.5719475	10.0150562	339	9.9849438	60
1	9.4134674	4707	10.5865326	9.4285575	5046	10.5714425	10.0150901	339	9.9849099	59
2	9.4139381	4701	10.5860619	9.4290621	5040	10.5709379	10.0151240	340	9.9848760	58
3	9.4144082	4696	10.5855918	9.4295661	5036	10.5704339	10.0151580	339	9.9848420	57
4	9.4148778	4690	10.5851222	9.4300697	5030	10.5699303	10.0151919	341	9.9848081	56
5	9.4153468	4684	10.5846532	9.4305727	5026	10.5694273	10.0152260	340	9.9847740	55
6	9.4158152	4680	10.5841848	9.4310753	5020	10.5689247	10.0152600	341	9.9847400	54
7	9.4162832	4674	10.5837168	9.4315773	5016	10.5684227	10.0152941	342	9.9847059	53
8	9.4167506	4668	10.5832494	9.4320789	5010	10.5679211	10.0153283	342	9.9846717	52
9	9.4172174	4663	10.5827826	9.4325799	5005	10.5674201	10.0153625	342	9.9846375	51
10	9.4176837	4658	10.5823163	9.4330804	5001	10.5669196	10.0153967	343	9.9846033	50
11	9.4181495	4653	10.5818505	9.4335805	4995	10.5664195	10.0154310	343	9.9845690	49
12	9.4186148	4647	10.5813852	9.4340800	4991	10.5659200	10.0154653	343	9.9845347	48
13	9.4190795	4641	10.5809205	9.4345791	4985	10.5654209	10.0154996	344	9.9845004	47
14	9.4195436	4637	10.5804564	9.4350776	4981	10.5649224	10.0155340	344	9.9844660	46
15	9.4200073	4631	10.5799927	9.4355757	4976	10.5644243	10.0155684	345	9.9844316	45
16	9.4204704	4626	10.5795296	9.4360733	4971	10.5639267	10.0156029	345	9.9843971	44
17	9.4209330	4620	10.5790670	9.4365704	4966	10.5634296	10.0156374	345	9.9843626	43
18	9.4213950	4616	10.5786050	9.4370670	4961	10.5629330	10.0156719	346	9.9843281	42
19	9.4218566	4610	10.5781434	9.4375631	4956	10.5624369	10.0157065	346	9.9842935	41
20	9.4223176	4604	10.5776824	9.4380587	4951	10.5619413	10.0157411	347	9.9842589	40
21	9.4227780	4600	10.5772220	9.4385538	4947	10.5614462	10.0157758	347	9.9842242	39
22	9.4232380	4594	10.5767620	9.4390485	4941	10.5609515	10.0158105	347	9.9841895	38
23	9.4236974	4589	10.5763026	9.4395426	4937	10.5604574	10.0158452	348	9.9841548	37
24	9.4241563	4584	10.5758437	9.4400363	4932	10.5599637	10.0158800	348	9.9841200	36
25	9.4246147	4579	10.5753853	9.4405295	4927	10.5594705	10.0159148	349	9.9840852	35
26	9.4250726	4573	10.5749274	9.4410222	4923	10.5589778	10.0159497	349	9.9840503	34
27	9.4255299	4568	10.5744701	9.4415145	4917	10.5584855	10.0159846	349	9.9840154	33
28	9.4259867	4563	10.5740133	9.4420062	4913	10.5579938	10.0160195	350	9.9839805	32
29	9.4264430	4558	10.5735570	9.4424975	4908	10.5575025	10.0160545	350	9.9839455	31
30	9.4268988	4553	10.5731012	9.4429883	4903	10.5570117	10.0160895	350	9.9839105	30
31	9.4273541	4548	10.5726459	9.4434786	4899	10.5565214	10.0161245	351	9.9838755	29
32	9.4278089	4542	10.5721911	9.4439685	4894	10.5560315	10.0161596	352	9.9838404	28
33	9.4282631	4538	10.5717369	9.4444579	4889	10.5555421	10.0161948	351	9.9838052	27
34	9.4287169	4532	10.5712831	9.4449468	4884	10.5550532	10.0162299	353	9.9837701	26
35	9.4291701	4527	10.5708299	9.4454352	4880	10.5545648	10.0162652	352	9.9837348	25
36	9.4296228	4522	10.5703772	9.4459232	4875	10.5540768	10.0163004	353	9.9836996	24
37	9.4300750	4517	10.5699250	9.4464107	4871	10.5535893	10.0163357	353	9.9836643	23
38	9.4305267	4512	10.5694733	9.4468978	4865	10.5531022	10.0163710	354	9.9836290	22
39	9.4309779	4507	10.5690221	9.4473843	4861	10.5526157	10.0164064	354	9.9835936	21
40	9.4314286	4502	10.5685714	9.4478704	4857	10.5521296	10.0164418	355	9.9835582	20
41	9.4318788	4497	10.5681212	9.4483561	4852	10.5516439	10.0164773	355	9.9835227	19
42	9.4323285	4492	10.5676715	9.4488413	4847	10.5511587	10.0165128	355	9.9834872	18
43	9.4327777	4487	10.5672223	9.4493260	4842	10.5506740	10.0165483	356	9.9834517	17
44	9.4332264	4482	10.5667736	9.4498102	4838	10.5501898	10.0165839	356	9.9834161	16
45	9.4336746	4477	10.5663254	9.4502940	4834	10.5497060	10.0166195	356	9.9833805	15
46	9.4341223	4471	10.5658777	9.4507774	4828	10.5492226	10.0166551	357	9.9833449	14
47	9.4345694	4467	10.5654306	9.4512602	4825	10.5487398	10.0166908	357	9.9833092	13
48	9.4350161	4462	10.5649839	9.4517427	4819	10.5482573	10.0167265	358	9.9832735	12
49	9.4354623	4457	10.5645377	9.4522246	4815	10.5477754	10.0167623	358	9.9832377	11
50	9.4359080	4452	10.5640920	9.4527061	4811	10.5472939	10.0167981	358	9.9832019	10
51	9.4363532	4448	10.5636468	9.4531872	4806	10.5468128	10.0168339	359	9.9831661	9
52	9.4367980	4442	10.5632020	9.4536678	4801	10.5463322	10.0168698	360	9.9831302	8
53	9.4372422	4437	10.5627578	9.4541479	4797	10.5458521	10.0169058	359	9.9830942	7
54	9.4376859	4433	10.5623141	9.4546276	4793	10.5453724	10.0169417	360	9.9830583	6
55	9.4381292	4427	10.5618708	9.4551069	4788	10.5448931	10.0169777	361	9.9830223	5
56	9.4385719	4423	10.5614281	9.4555857	4784	10.5444143	10.0170138	361	9.9829862	4
57	9.4390142	4418	10.5609858	9.4560641	4779	10.5439359	10.0170499	361	9.9829501	3
58	9.4394560	4413	10.5605440	9.4565420	4774	10.5434580	10.0170860	362	9.9829140	2
59	9.4398973	4408	10.5601027	9.4570194	4770	10.5429806	10.0171222	362	9.9828778	1
60	9.4403381		10.5596619	9.4574964		10.5425036	10.0171584		9.9828416	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

105° 74°

16° 163°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.4403381	4403	10.5596619	9.4574964	4766	10.5425036	10.0171584	362	9.9828416	60
1	9.4407784	4398	10.5592216	9.4579730	4761	10.5420270	10.0171946	363	9.9828054	59
2	9.4412182	4394	10.5587818	9.4584491	4757	10.5415509	10.0172309	363	9.9827691	58
3	9.4416576	4389	10.5583424	9.4589248	4753	10.5410752	10.0172672	364	9.9827328	57
4	9.4420965	4384	10.5579035	9.4594001	4748	10.5405999	10.0173036	364	9.9826964	56
5	9.4425349	4379	10.5574651	9.4598749	4743	10.5401251	10.0173400	364	9.9826600	55
6	9.4429728	4375	10.5570272	9.4603492	4740	10.5396508	10.0173764	365	9.9826236	54
7	9.4434103	4369	10.5565897	9.4608232	4735	10.5391768	10.0174129	365	9.9825871	53
8	9.4438472	4365	10.5561528	9.4612967	4730	10.5387033	10.0174494	366	9.9825506	52
9	9.4442837	4360	10.5557163	9.4617697	4726	10.5382303	10.0174860	366	9.9825140	51
10	9.4447197	4356	10.5552803	9.4622423	4722	10.5377577	10.0175226	366	9.9824774	50
11	9.4451553	4351	10.5548447	9.4627145	4718	10.5372855	10.0175592	367	9.9824408	49
12	9.4455904	4346	10.5544096	9.4631863	4713	10.5368137	10.0175959	367	9.9824041	48
13	9.4460250	4341	10.5539750	9.4636576	4709	10.5363424	10.0176326	368	9.9823674	47
14	9.4464591	4336	10.5535409	9.4641285	4705	10.5358715	10.0176694	368	9.9823306	46
15	9.4468927	4332	10.5531073	9.4645990	4700	10.5354010	10.0177062	369	9.9822938	45
16	9.4473259	4327	10.5526741	9.4650690	4696	10.5349310	10.0177431	368	9.9822569	44
17	9.4477586	4323	10.5522414	9.4655386	4692	10.5344614	10.0177799	370	9.9822201	43
18	9.4481909	4318	10.5518091	9.4660078	4687	10.5339922	10.0178169	369	9.9821831	42
19	9.4486227	4313	10.5513773	9.4664765	4683	10.5335235	10.0178538	370	9.9821462	41
20	9.4490540	4309	10.5509460	9.4669448	4679	10.5330552	10.0178908	371	9.9821092	40
21	9.4494849	4304	10.5505151	9.4674127	4675	10.5325873	10.0179279	370	9.9820721	39
22	9.4499153	4299	10.5500847	9.4678802	4671	10.5321198	10.0179649	372	9.9820351	38
23	9.4503452	4295	10.5496548	9.4683473	4666	10.5316527	10.0180021	371	9.9819979	37
24	9.4507747	4290	10.5492253	9.4688139	4662	10.5311861	10.0180392	372	9.9819608	36
25	9.4512037	4285	10.5487963	9.4692801	4658	10.5307199	10.0180764	373	9.9819236	35
26	9.4516322	4281	10.5483678	9.4697459	4653	10.5302541	10.0181137	373	9.9818863	34
27	9.4520603	4276	10.5479397	9.4702112	4650	10.5297888	10.0181510	373	9.9818490	33
28	9.4524879	4272	10.5475121	9.4706762	4645	10.5293238	10.0181883	373	9.9818117	32
29	9.4529151	4267	10.5470849	9.4711407	4641	10.5288593	10.0182256	374	9.9817744	31
30	9.4533418	4263	10.5466582	9.4716048	4637	10.5283952	10.0182630	375	9.9817370	30
31	9.4537681	4258	10.5462319	9.4720685	4633	10.5279315	10.0183005	375	9.9816995	29
32	9.4541939	4253	10.5458061	9.4725318	4629	10.5274682	10.0183380	375	9.9816620	28
33	9.4546192	4249	10.5453808	9.4729947	4625	10.5270053	10.0183755	375	9.9816245	27
34	9.4550441	4245	10.5449559	9.4734572	4620	10.5265428	10.0184130	376	9.9815870	26
35	9.4554686	4240	10.5445314	9.4739192	4616	10.5260808	10.0184506	377	9.9815494	25
36	9.4558926	4235	10.5441074	9.4743808	4613	10.5256192	10.0184883	377	9.9815117	24
37	9.4563161	4231	10.5436839	9.4748421	4608	10.5251579	10.0185260	377	9.9814740	23
38	9.4567392	4226	10.5432608	9.4753029	4604	10.5246971	10.0185637	377	9.9814363	22
39	9.4571618	4222	10.5428382	9.4757633	4600	10.5242367	10.0186014	378	9.9813986	21
40	9.4575840	4218	10.5424160	9.4762233	4596	10.5237767	10.0186392	379	9.9813608	20
41	9.4580058	4213	10.5419942	9.4766829	4592	10.5233171	10.0186771	379	9.9813229	19
42	9.4584271	4209	10.5415729	9.4771421	4588	10.5228579	10.0187150	379	9.9812850	18
43	9.4588480	4204	10.5411520	9.4776009	4583	10.5223991	10.0187529	380	9.9812471	17
44	9.4592684	4200	10.5407316	9.4780592	4580	10.5219408	10.0187909	380	9.9812091	16
45	9.4596884	4195	10.5403116	9.4785172	4576	10.5214828	10.0188289	380	9.9811711	15
46	9.4601079	4191	10.5398921	9.4789748	4571	10.5210252	10.0188669	381	9.9811331	14
47	9.4605270	4186	10.5394730	9.4794319	4568	10.5205681	10.0189050	381	9.9810950	13
48	9.4609456	4182	10.5390544	9.4798887	4564	10.5201113	10.0189431	382	9.9810569	12
49	9.4613638	4178	10.5386362	9.4803451	4560	10.5196549	10.0189813	382	9.9810187	11
50	9.4617816	4173	10.5382184	9.4808011	4555	10.5191989	10.0190195	382	9.9809805	10
51	9.4621989	4169	10.5378011	9.4812566	4552	10.5187434	10.0190577	383	9.9809423	9
52	9.4626158	4165	10.5373842	9.4817118	4548	10.5182882	10.0190960	383	9.9809040	8
53	9.4630323	4160	10.5369677	9.4821666	4544	10.5178334	10.0191343	384	9.9808657	7
54	9.4634483	4156	10.5365517	9.4826210	4540	10.5173790	10.0191727	384	9.9808273	6
55	9.4638639	4151	10.5361361	9.4830750	4536	10.5169250	10.0192111	384	9.9807889	5
56	9.4642790	4148	10.5357210	9.4835286	4532	10.5164714	10.0192495	385	9.9807505	4
57	9.4646938	4143	10.5353062	9.4839818	4528	10.5160182	10.0192880	385	9.9807120	3
58	9.4651081	4138	10.5348919	9.4844346	4524	10.5155654	10.0193265	386	9.9806735	2
59	9.4655219	4134	10.5344781	9.4848870	4520	10.5151130	10.0193651	386	9.9806349	1
60	9.4659353		10.5340647	9.4853390		10.5146610	10.0194037		9.9805963	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

106° 73°

17°										162°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.4659353	4130	10.5340647	9.4853390	4517	10.5146610	10.0194037	386	9.9805963	60
1	9.4663483	4126	10.5336517	9.4857907	4512	10.5142093	10.0194423	387	9.9805577	59
2	9.4667609	4121	10.5332391	9.4862419	4509	10.5137581	10.0194810	387	9.9805190	58
3	9.4671730	4118	10.5328270	9.4866928	4505	10.5133072	10.0195197	388	9.9804803	57
4	9.4675848	4112	10.5324152	9.4871433	4500	10.5128567	10.0195585	388	9.9804415	56
5	9.4679960	4109	10.5320040	9.4875933	4497	10.5124067	10.0195973	388	9.9804027	55
6	9.4684069	4104	10.5315931	9.4880430	4494	10.5119570	10.0196361	389	9.9803639	54
7	9.4688173	4100	10.5311827	9.4884924	4489	10.5115076	10.0196750	390	9.9803250	53
8	9.4692273	4096	10.5307727	9.4889413	4485	10.5110587	10.0197140	389	9.9802860	52
9	9.4696369	4092	10.5303631	9.4893898	4482	10.5106102	10.0197529	390	9.9802471	51
10	9.4700461	4087	10.5299539	9.4898380	4478	10.5101620	10.0197919	391	9.9802081	50
11	9.4704548	4083	10.5295452	9.4902858	4474	10.5097142	10.0198310	391	9.9801690	49
12	9.4708631	4079	10.5291369	9.4907332	4470	10.5092668	10.0198701	391	9.9801299	48
13	9.4712710	4075	10.5287290	9.4911802	4467	10.5088198	10.0199092	392	9.9800908	47
14	9.4716785	4071	10.5283215	9.4916269	4462	10.5083731	10.0199484	392	9.9800516	46
15	9.4720856	4066	10.5279144	9.4920731	4459	10.5079269	10.0199876	392	9.9800124	45
16	9.4724922	4063	10.5275078	9.4925190	4456	10.5074810	10.0200268	393	9.9799732	44
17	9.4728985	4058	10.5271015	9.4929646	4451	10.5070354	10.0200661	393	9.9799339	43
18	9.4733043	4054	10.5266957	9.4934097	4448	10.5065903	10.0201054	393	9.9798946	42
19	9.4737097	4049	10.5262903	9.4938545	4443	10.5061455	10.0201448	394	9.9798552	41
20	9.4741146	4046	10.5258854	9.4942988	4441	10.5057012	10.0201842	394	9.9798158	40
21	9.4745192	4042	10.5254808	9.4947429	4436	10.5052571	10.0202236	394	9.9797764	39
22	9.4749234	4037	10.5250766	9.4951865	4433	10.5048135	10.0202631	395	9.9797369	38
23	9.4753271	4033	10.5246729	9.4956298	4429	10.5043702	10.0203027	396	9.9796973	37
24	9.4757304	4030	10.5242696	9.4960727	4425	10.5039273	10.0203422	395	9.9796578	36
25	9.4761334	4025	10.5238666	9.4965152	4422	10.5034848	10.0203818	396	9.9796182	35
26	9.4765359	4021	10.5234641	9.4969574	4417	10.5030426	10.0204215	397	9.9795785	34
27	9.4769380	4016	10.5230620	9.4973991	4415	10.5026009	10.0204612	397	9.9795388	33
28	9.4773396	4013	10.5226604	9.4978406	4410	10.5021594	10.0205009	397	9.9794991	32
29	9.4777409	4009	10.5222591	9.4982816	4407	10.5017184	10.0205407	398	9.9794593	31
30	9.4781418	4005	10.5218582	9.4987223	4403	10.5012777	10.0205805	398	9.9794195	30
31	9.4785423	4000	10.5214577	9.4991626	4400	10.5008374	10.0206204	399	9.9793796	29
32	9.4789423	3997	10.5210577	9.4996026	4396	10.5003974	10.0206602	398	9.9793398	28
33	9.4793420	3992	10.5206580	9.5000422	4392	10.4999578	10.0207002	400	9.9792998	27
34	9.4797412	3989	10.5202588	9.5004814	4389	10.4995186	10.0207401	399	9.9792599	26
35	9.4801401	3984	10.5198599	9.5009203	4385	10.4990797	10.0207802	401	9.9792198	25
36	9.4805385	3981	10.5194615	9.5013588	4381	10.4986412	10.0208202	400	9.9791798	24
37	9.4809366	3976	10.5190634	9.5017969	4378	10.4982031	10.0208603	401	9.9791397	23
38	9.4813342	3973	10.5186658	9.5022347	4374	10.4977653	10.0209004	402	9.9790996	22
39	9.4817315	3968	10.5182685	9.5026721	4371	10.4973279	10.0209406	402	9.9790594	21
40	9.4821283	3965	10.5178717	9.5031092	4367	10.4968908	10.0209808	403	9.9790192	20
41	9.4825248	3960	10.5174752	9.5035459	4363	10.4964541	10.0210211	403	9.9789789	19
42	9.4829208	3957	10.5170792	9.5039822	4360	10.4960178	10.0210614	403	9.9789386	18
43	9.4833165	3952	10.5166835	9.5044182	4356	10.4955818	10.0211017	404	9.9788983	17
44	9.4837117	3949	10.5162883	9.5048538	4353	10.4951462	10.0211421	404	9.9788579	16
45	9.4841066	3944	10.5158934	9.5052891	4349	10.4947109	10.0211825	405	9.9788175	15
46	9.4845010	3941	10.5154990	9.5057240	4346	10.4942760	10.0212230	405	9.9787770	14
47	9.4848951	3937	10.5151049	9.5061586	4342	10.4938414	10.0212635	405	9.9787365	13
48	9.4852888	3932	10.5147112	9.5065928	4339	10.4934072	10.0213040	406	9.9786960	12
49	9.4856820	3929	10.5143180	9.5070267	4335	10.4929733	10.0213446	406	9.9786554	11
50	9.4860749	3925	10.5139251	9.5074602	4331	10.4925398	10.0213852	407	9.9786148	10
51	9.4864674	3921	10.5135326	9.5078933	4328	10.4921067	10.0214259	407	9.9785741	9
52	9.4868595	3917	10.5131405	9.5083261	4325	10.4916739	10.0214666	407	9.9785334	8
53	9.4872512	3914	10.5127488	9.5087586	4321	10.4912414	10.0215073	408	9.9784927	7
54	9.4876426	3909	10.5123574	9.5091907	4317	10.4908093	10.0215481	408	9.9784519	6
55	9.4880335	3905	10.5119665	9.5096224	4315	10.4903776	10.0215889	409	9.9784111	5
56	9.4884240	3902	10.5115760	9.5100539	4310	10.4899461	10.0216298	409	9.9783702	4
57	9.4888142	3898	10.5111858	9.5104849	4307	10.4895151	10.0216707	409	9.9783293	3
58	9.4892040	3894	10.5107960	9.5109156	4304	10.4890844	10.0217117	410	9.9782883	2
59	9.4895934	3890	10.5104066	9.5113460	4300	10.4886540	10.0217526	409	9.9782474	1
60	9.4899824		10.5100176	9.5117760		10.4882240	10.0217937	411	9.9782063	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
107°										72°

18° 161°

/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.4899824		10.5100176	9.5117760		10.4882240	10.0217937		9.9782063	60
1	9.4903710	3886	10.5096290	9.5122057	4297	10.4877943	10.0218347	410	9.9781653	59
2	9.4907592	3882	10.5092408	9.5126351	4294	10.4873649	10.0218759	412	9.9781241	58
3	9.4911471	3879	10.5088529	9.5130641	4290	10.4869359	10.0219170	411	9.9780830	57
4	9.4915345	3874	10.5084655	9.5134927	4286	10.4865073	10.0219582	412	9.9780418	56
5	9.4919216	3871	10.5080784	9.5139210	4283	10.4860790	10.0219994	412	9.9780006	55
6	9.4923083	3867	10.5076917	9.5143490	4280	10.4856510	10.0220407	413	9.9779593	54
		3863			4276			413		
7	9.4926946		10.5073054	9.5147766		10.4852234	10.0220820		9.9779180	53
8	9.4930806	3860	10.5069194	9.5152039	4273	10.4847961	10.0221234	414	9.9778766	52
9	9.4934661	3855	10.5065339	9.5156309	4270	10.4843691	10.0221647	413	9.9778353	51
10	9.4938513	3852	10.5061487	9.5160575	4266	10.4839425	10.0222062	415	9.9777938	50
11	9.4942361	3848	10.5057639	9.5164838	4263	10.4835162	10.0222477	415	9.9777523	49
12	9.4946205	3844	10.5053795	9.5169097	4259	10.4830903	10.0222892	415	9.9777108	48
		3841			4256			415		
13	9.4950046		10.5049954	9.5173353		10.4826647	10.0223307		9.9776693	47
14	9.4953883	3837	10.5046117	9.5177606	4253	10.4822394	10.0223723	416	9.9776277	46
15	9.4957716	3833	10.5042284	9.5181855	4249	10.4818145	10.0224140	417	9.9775860	45
16	9.4961545	3829	10.5038455	9.5186101	4246	10.4813899	10.0224556	416	9.9775444	44
17	9.4965370	3825	10.5034630	9.5190344	4243	10.4809656	10.0224974	418	9.9775026	43
18	9.4969192	3822	10.5030808	9.5194583	4239	10.4805417	10.0225391	417	9.9774609	42
		3818			4236			418		
19	9.4973010		10.5026990	9.5198819		10.4801181	10.0225809		9.9774191	41
20	9.4976824	3814	10.5023176	9.5203052	4233	10.4796948	10.0226228	419	9.9773772	40
21	9.4980635	3811	10.5019365	9.5207282	4230	10.4792718	10.0226646	418	9.9773354	39
22	9.4984442	3807	10.5015558	9.5211508	4226	10.4788492	10.0227066	420	9.9772934	38
23	9.4988245	3803	10.5011755	9.5215730	4222	10.4784270	10.0227485	419	9.9772515	37
24	9.4992045	3800	10.5007955	9.5219950	4220	10.4780050	10.0227905	420	9.9772095	36
		3795			4216			421		
25	9.4995840		10.5004160	9.5224166		10.4775834	10.0228326		9.9771674	35
26	9.4999633	3793	10.5000367	9.5228379	4213	10.4771621	10.0228747	421	9.9771253	34
27	9.5003421	3788	10.4996579	9.5232589	4210	10.4767411	10.0229168	421	9.9770832	33
28	9.5007206	3785	10.4992794	9.5236795	4206	10.4763205	10.0229590	422	9.9770410	32
29	9.5010987	3781	10.4989013	9.5240999	4204	10.4759001	10.0230012	422	9.9769988	31
30	9.5014764	3777	10.4985236	9.5245199	4200	10.4754801	10.0230434	422	9.9769566	30
		3774			4196			423		
31	9.5018538		10.4981462	9.5249395		10.4750605	10.0230857		9.9769143	29
32	9.5022308	3770	10.4977692	9.5253589	4194	10.4746411	10.0231280	423	9.9768720	28
33	9.5026075	3767	10.4973925	9.5257779	4190	10.4742221	10.0231704	424	9.9768296	27
34	9.5029838	3763	10.4970162	9.5261966	4187	10.4738034	10.0232128	424	9.9767872	26
35	9.5033597	3759	10.4966403	9.5266150	4184	10.4733850	10.0232553	425	9.9767447	25
36	9.5037353	3756	10.4962647	9.5270331	4181	10.4729669	10.0232978	425	9.9767022	24
		3752			4177			425		
37	9.5041105		10.4958895	9.5274508		10.4725492	10.0233403		9.9766597	23
38	9.5044853	3748	10.4955147	9.5278682	4174	10.4721318	10.0233829	426	9.9766171	22
39	9.5048598	3745	10.4951402	9.5282853	4171	10.4717147	10.0234255	426	9.9765745	21
40	9.5052339	3741	10.4947661	9.5287021	4168	10.4712979	10.0234682	427	9.9765318	20
41	9.5056077	3738	10.4943923	9.5291186	4165	10.4708814	10.0235109	427	9.9764891	19
42	9.5059811	3734	10.4940189	9.5295347	4161	10.4704653	10.0235536	427	9.9764464	18
		3731			4158			428		
43	9.5063542		10.4936458	9.5299505		10.4700495	10.0235964		9.9764036	17
44	9.5067269	3727	10.4932731	9.5303661	4156	10.4696339	10.0236392	428	9.9763608	16
45	9.5070992	3723	10.4929008	9.5307813	4152	10.4692187	10.0236821	429	9.9763179	15
46	9.5074712	3720	10.4925288	9.5311961	4148	10.4688039	10.0237250	429	9.9762750	14
47	9.5078428	3716	10.4921572	9.5316107	4146	10.4683893	10.0237679	429	9.9762321	13
48	9.5082141	3713	10.4917859	9.5320250	4143	10.4679750	10.0238109	430	9.9761891	12
		3709			4139			430		
49	9.5085850		10.4914150	9.5324389		10.4675611	10.0238539		9.9761461	11
50	9.5089556	3706	10.4910444	9.5328526	4137	10.4671474	10.0238970	431	9.9761030	10
51	9.5093258	3702	10.4906742	9.5332659	4133	10.4667341	10.0239401	431	9.9760599	9
52	9.5096956	3698	10.4903044	9.5336789	4130	10.4663211	10.0239833	432	9.9760167	8
53	9.5100651	3695	10.4899349	9.5340916	4127	10.4659084	10.0240264	431	9.9759736	7
54	9.5104343	3692	10.4895657	9.5345040	4124	10.4654960	10.0240697	433	9.9759303	6
		3688			4121			433		
55	9.5108031		10.4891969	9.5349161		10.4650839	10.0241130		9.9758870	5
56	9.5111716	3685	10.4888284	9.5353278	4117	10.4646722	10.0241563	433	9.9758437	4
57	9.5115397	3681	10.4884603	9.5357393	4115	10.4642607	10.0241996	433	9.9758004	3
58	9.5119074	3677	10.4880926	9.5361505	4112	10.4638495	10.0242430	434	9.9757570	2
59	9.5122749	3675	10.4877251	9.5365613	4108	10.4634387	10.0242865	435	9.9757135	1
60	9.5126419	3670	10.4873581	9.5369719	4106	10.4630281	10.0243299	434	9.9756701	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/

108° 71°

19°										160°
/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.5126419		10.4873581	9.5369719		10.4630281	10.0243299		9.9756701	60
1	9.5130086	3667	10.4869914	9.5373821	4102	10.4626179	10.0243735	436	9.9756265	59
2	9.5133750	3664	10.4866250	9.5377920	4099	10.4622080	10.0244170	435	9.9755830	58
3	9.5137410	3660	10.4862590	9.5382017	4097	10.4617983	10.0244606	436	9.9755394	57
4	9.5141067	3657	10.4858933	9.5386110	4093	10.4613890	10.0245043	437	9.9754957	56
5	9.5144721	3654	10.4855279	9.5390200	4090	10.4609800	10.0245479	436	9.9754521	55
6	9.5148371	3650	10.4851629	9.5394287	4087	10.4605713	10.0245917	438	9.9754083	54
7	9.5152017	3646	10.4847983	9.5398371	4084	10.4601629	10.0246354	437	9.9753646	53
8	9.5155660	3643	10.4844340	9.5402453	4082	10.4597547	10.0246792	438	9.9753208	52
9	9.5159300	3640	10.4840700	9.5406531	4078	10.4593469	10.0247231	439	9.9752769	51
10	9.5162936	3636	10.4837064	9.5410606	4075	10.4589394	10.0247670	439	9.9752330	50
11	9.5166569	3633	10.4833431	9.5414678	4072	10.4585322	10.0248109	439	9.9751891	49
12	9.5170198	3629	10.4829802	9.5418747	4069	10.4581253	10.0248549	440	9.9751451	48
13	9.5173824	3626	10.4826176	9.5422813	4066	10.4577187	10.0248989	440	9.9751011	47
14	9.5177447	3623	10.4822553	9.5426877	4064	10.4573123	10.0249430	441	9.9750570	46
15	9.5181066	3619	10.4818934	9.5430937	4060	10.4569063	10.0249871	441	9.9750129	45
16	9.5184682	3616	10.4815318	9.5434994	4057	10.4565006	10.0250312	441	9.9749688	44
17	9.5188295	3613	10.4811705	9.5439048	4054	10.4560952	10.0250754	442	9.9749246	43
18	9.5191904	3609	10.4808096	9.5443100	4052	10.4556900	10.0251196	442	9.9748804	42
19	9.5195510	3606	10.4804490	9.5447148	4048	10.4552852	10.0251639	443	9.9748361	41
20	9.5199112	3602	10.4800883	9.5451193	4045	10.4548807	10.0252082	443	9.9747918	40
21	9.5202711	3599	10.4797289	9.5455236	4043	10.4544764	10.0252525	443	9.9747475	39
22	9.5206307	3596	10.4793693	9.5459276	4040	10.4540724	10.0252969	444	9.9747031	38
23	9.5209899	3592	10.4790101	9.5463312	4036	10.4536688	10.0253413	444	9.9746587	37
24	9.5213488	3589	10.4786512	9.5467346	4034	10.4532654	10.0253858	445	9.9746142	36
25	9.5217074	3586	10.4782926	9.5471377	4031	10.4528623	10.0254303	445	9.9745697	35
26	9.5220656	3582	10.4779344	9.5475405	4028	10.4524595	10.0254748	445	9.9745252	34
27	9.5224235	3579	10.4775765	9.5479430	4025	10.4520570	10.0255194	446	9.9744806	33
28	9.5227811	3576	10.4772189	9.5483452	4022	10.4516548	10.0255641	447	9.9744359	32
29	9.5231383	3572	10.4768617	9.5487471	4019	10.4512529	10.0256087	446	9.9743913	31
30	9.5234953	3570	10.4765047	9.5491487	4016	10.4508513	10.0256534	447	9.9743466	30
31	9.5238518	3565	10.4761482	9.5495500	4013	10.4504500	10.0256982	448	9.9743018	29
32	9.5242081	3563	10.4757919	9.5499511	4011	10.4500489	10.0257430	448	9.9742570	28
33	9.5245640	3559	10.4754360	9.5503519	4008	10.4496481	10.0257878	448	9.9742122	27
34	9.5249196	3556	10.4750804	9.5507523	4004	10.4492477	10.0258327	449	9.9741673	26
35	9.5252749	3553	10.4747251	9.5511525	4002	10.4488475	10.0258776	449	9.9741224	25
36	9.5256298	3549	10.4743702	9.5515524	3999	10.4484476	10.0259226	450	9.9740774	24
37	9.5259844	3546	10.4740156	9.5519521	3997	10.4480479	10.0259676	450	9.9740324	23
38	9.5263387	3543	10.4736613	9.5523514	3993	10.4476486	10.0260127	451	9.9739873	22
39	9.5266927	3540	10.4733073	9.5527504	3990	10.4472496	10.0260578	451	9.9739422	21
40	9.5270463	3536	10.4729537	9.5531492	3988	10.4468508	10.0261029	451	9.9738971	20
41	9.5273997	3534	10.4726003	9.5535477	3985	10.4464523	10.0261481	452	9.9738519	19
42	9.5277526	3529	10.4722474	9.5539459	3982	10.4460541	10.0261933	452	9.9738067	18
43	9.5281053	3527	10.4718947	9.5543438	3979	10.4456562	10.0262385	452	9.9737615	17
44	9.5284577	3524	10.4715423	9.5547415	3977	10.4452585	10.0262838	453	9.9737162	16
45	9.5288097	3520	10.4711903	9.5551388	3973	10.4448612	10.0263291	453	9.9736709	15
46	9.5291614	3517	10.4708386	9.5555359	3971	10.4444641	10.0263745	454	9.9736255	14
47	9.5295128	3514	10.4704872	9.5559327	3968	10.4440673	10.0264199	454	9.9735801	13
48	9.5298638	3510	10.4701362	9.5563292	3965	10.4436708	10.0264654	455	9.9735346	12
49	9.5302146	3508	10.4697854	9.5567255	3963	10.4432745	10.0265109	455	9.9734891	11
50	9.5305650	3504	10.4694350	9.5571214	3959	10.4428786	10.0265565	456	9.9734435	10
51	9.5309151	3501	10.4690849	9.5575171	3957	10.4424829	10.0266020	455	9.9733980	9
52	9.5312649	3498	10.4687351	9.5579125	3954	10.4420875	10.0266477	457	9.9733523	8
53	9.5316143	3494	10.4683857	9.5583077	3952	10.4416923	10.0266933	456	9.9733067	7
54	9.5319635	3492	10.4680365	9.5587025	3948	10.4412975	10.0267390	457	9.9732610	6
55	9.5323123	3488	10.4676877	9.5590971	3946	10.4409029	10.0267848	458	9.9732152	5
56	9.5326608	3485	10.4673392	9.5594914	3943	10.4405086	10.0268306	458	9.9731694	4
57	9.5330090	3482	10.4669910	9.5598854	3940	10.4401146	10.0268764	458	9.9731236	3
58	9.5333569	3479	10.4666431	9.5602792	3938	10.4397208	10.0269223	459	9.9730777	2
59	9.5337044	3475	10.4662956	9.5606727	3935	10.4393273	10.0269682	459	9.9730318	1
60	9.5340517	3473	10.4659483	9.5610659	3932	10.4389341	10.0270142	460	9.9729858	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/
109°										70°

20°										159°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.5340517		10.4659483	9.5610659		10.4389341	10.0270142		9.9729858	60
1	9.5343986	3469	10.4656014	9.5614588	3929	10.4385412	10.0270602	460	9.9729398	59
2	9.5347452	3466	10.4652548	9.5618515	3927	10.4381485	10.0271062	460	9.9728938	58
3	9.5350915	3463	10.4649085	9.5622439	3924	10.4377561	10.0271523	461	9.9728477	57
4	9.5354375	3460	10.4645625	9.5626360	3921	10.4373640	10.0271984	461	9.9728016	56
5	9.5357832	3457	10.4642168	9.5630278	3918	10.4369722	10.0272446	462	9.9727554	55
6	9.5361286	3454	10.4638714	9.5634194	3916	10.4365806	10.0272908	462	9.9727092	54
7	9.5364737	3451	10.4635263	9.5638107	3913	10.4361893	10.0273371	463	9.9726629	53
8	9.5368184	3447	10.4631816	9.5642018	3911	10.4357982	10.0273834	463	9.9726166	52
9	9.5371629	3445	10.4628371	9.5645925	3907	10.4354075	10.0274297	463	9.9725703	51
10	9.5375070	3441	10.4624930	9.5649831	3906	10.4350169	10.0274761	464	9.9725239	50
11	9.5378508	3438	10.4621492	9.5653733	3902	10.4346267	10.0275225	464	9.9724775	49
12	9.5381943	3435	10.4618057	9.5657633	3900	10.4342367	10.0275690	465	9.9724310	48
13	9.5385375	3432	10.4614625	9.5661530	3897	10.4338470	10.0276155	465	9.9723845	47
14	9.5388804	3429	10.4611196	9.5665424	3894	10.4334576	10.0276620	465	9.9723380	46
15	9.5392230	3426	10.4607770	9.5669316	3892	10.4330684	10.0277086	466	9.9722914	45
16	9.5395653	3423	10.4604347	9.5673205	3889	10.4326795	10.0277552	466	9.9722448	44
17	9.5399073	3420	10.4600927	9.5677091	3886	10.4322909	10.0278019	467	9.9721981	43
18	9.5402489	3416	10.4597511	9.5680975	3884	10.4319025	10.0278486	467	9.9721514	42
19	9.5405903	3414	10.4594097	9.5684856	3881	10.4315144	10.0278953	467	9.9721047	41
20	9.5409314	3411	10.4590686	9.5688735	3879	10.4311265	10.0279421	468	9.9720579	40
21	9.5412721	3407	10.4587279	9.5692611	3876	10.4307389	10.0279890	469	9.9720110	39
22	9.5416126	3405	10.4583874	9.5696484	3873	10.4303516	10.0280358	468	9.9719642	38
23	9.5419527	3401	10.4580473	9.5700355	3871	10.4299645	10.0280828	470	9.9719172	37
24	9.5422926	3399	10.4577074	9.5704223	3868	10.4295777	10.0281297	469	9.9718703	36
25	9.5426321	3395	10.4573679	9.5708088	3865	10.4291912	10.0281767	470	9.9718233	35
26	9.5429713	3392	10.4570287	9.5711951	3863	10.4288049	10.0282238	471	9.9717762	34
27	9.5433103	3390	10.4566897	9.5715811	3860	10.4284189	10.0282709	471	9.9717291	33
28	9.5436489	3386	10.4563511	9.5719669	3858	10.4280331	10.0283180	471	9.9716820	32
29	9.5439873	3384	10.4560127	9.5723524	3855	10.4276476	10.0283652	472	9.9716348	31
30	9.5443253	3380	10.4556747	9.5727377	3853	10.4272623	10.0284124	472	9.9715876	30
31	9.5446630	3377	10.4553370	9.5731227	3850	10.4268773	10.0284596	472	9.9715404	29
32	9.5450005	3375	10.4549995	9.5735074	3847	10.4264926	10.0285069	473	9.9714931	28
33	9.5453376	3371	10.4546624	9.5738919	3845	10.4261081	10.0285543	474	9.9714457	27
34	9.5456745	3369	10.4543255	9.5742761	3842	10.4257239	10.0286016	473	9.9713984	26
35	9.5460110	3365	10.4539890	9.5746601	3840	10.4253399	10.0286491	475	9.9713509	25
36	9.5463472	3362	10.4536528	9.5750438	3837	10.4249562	10.0286965	474	9.9713035	24
37	9.5466832	3360	10.4533168	9.5754272	3834	10.4245728	10.0287440	475	9.9712560	23
38	9.5470189	3357	10.4529811	9.5758104	3832	10.4241896	10.0287916	476	9.9712084	22
39	9.5473542	3353	10.4526458	9.5761934	3830	10.4238066	10.0288392	476	9.9711608	21
40	9.5476893	3351	10.4523107	9.5765761	3827	10.4234239	10.0288868	476	9.9711132	20
41	9.5480240	3347	10.4519760	9.5769585	3824	10.4230415	10.0289345	477	9.9710655	19
42	9.5483585	3345	10.4516415	9.5773407	3822	10.4226593	10.0289822	477	9.9710178	18
43	9.5486927	3342	10.4513073	9.5777226	3819	10.4222774	10.0290299	477	9.9709701	17
44	9.5490266	3339	10.4509734	9.5781043	3817	10.4218957	10.0290777	478	9.9709223	16
45	9.5493602	3336	10.4506398	9.5784858	3815	10.4215142	10.0291256	479	9.9708744	15
46	9.5496935	3333	10.4503065	9.5788669	3811	10.4211331	10.0291735	479	9.9708265	14
47	9.5500265	3330	10.4499735	9.5792479	3810	10.4207521	10.0292214	479	9.9707786	13
48	9.5503592	3327	10.4496408	9.5796286	3807	10.4203714	10.0292694	480	9.9707306	12
49	9.5506916	3324	10.4493084	9.5800090	3804	10.4199910	10.0293174	480	9.9706826	11
50	9.5510237	3321	10.4489763	9.5803892	3802	10.4196108	10.0293654	480	9.9706346	10
51	9.5513556	3319	10.4486444	9.5807691	3799	10.4192309	10.0294135	481	9.9705865	9
52	9.5516871	3315	10.4483129	9.5811488	3797	10.4188512	10.0294617	482	9.9705383	8
53	9.5520184	3313	10.4479816	9.5815282	3794	10.4184718	10.0295098	481	9.9704902	7
54	9.5523494	3310	10.4476506	9.5819074	3792	10.4180926	10.0295581	483	9.9704419	6
55	9.5526801	3307	10.4473199	9.5822864	3790	10.4177136	10.0296063	482	9.9703937	5
56	9.5530105	3304	10.4469895	9.5826651	3787	10.4173349	10.0296546	483	9.9703454	4
57	9.5533406	3301	10.4466594	9.5830435	3784	10.4169565	10.0297030	484	9.9702970	3
58	9.5536704	3298	10.4463296	9.5834217	3782	10.4165783	10.0297514	484	9.9702486	2
59	9.5539999	3295	10.4460001	9.5837997	3780	10.4162003	10.0297998	484	9.9702002	1
60	9.5543292	3293	10.4456708	9.5841774	3777	10.4158226	10.0298483	485	9.9701517	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
110°										69°

21° 158°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.5543292		10.4456708	9.5841774		10.4158226	10.0298483		9.9701517	60
1	9.5546581	3289	10.4453419	9.5845549	3775	10.4154451	10.0298968	485	9.9701032	59
2	9.5549868	3287	10.4450132	9.5849321	3772	10.4150679	10.0299453	485	9.9700547	58
3	9.5553152	3284	10.4446848	9.5853091	3770	10.4146909	10.0299939	486	9.9700061	57
4	9.5556433	3281	10.4443567	9.5856859	3768	10.4143141	10.0300426	487	9.9699574	56
5	9.5559711	3278	10.4440289	9.5860624	3765	10.4139376	10.0300913	487	9.9699087	55
6	9.5562987	3276	10.4437013	9.5864386	3762	10.4135614	10.0301400	487	9.9698600	54
7	9.5566259	3272	10.4433741	9.5868147	3761	10.4131853	10.0301888	488	9.9698112	53
8	9.5569529	3270	10.4430471	9.5871904	3757	10.4128096	10.0302376	488	9.9697624	52
9	9.5572796	3267	10.4427204	9.5875660	3756	10.4124340	10.0302864	488	9.9697136	51
10	9.5576060	3264	10.4423940	9.5879413	3753	10.4120587	10.0303353	489	9.9696647	50
11	9.5579321	3261	10.4420679	9.5883163	3750	10.4116837	10.0303842	489	9.9696158	49
12	9.5582579	3258	10.4417421	9.5886912	3749	10.4113088	10.0304332	490	9.9695668	48
13	9.5585835	3256	10.4414165	9.5890657	3745	10.4109343	10.0304823	491	9.9695177	47
14	9.5589088	3253	10.4410912	9.5894401	3744	10.4105599	10.0305313	490	9.9694687	46
15	9.5592338	3250	10.4407662	9.5898142	3741	10.4101858	10.0305804	491	9.9694196	45
16	9.5595585	3247	10.4404415	9.5901881	3739	10.4098119	10.0306296	492	9.9693704	44
17	9.5598829	3244	10.4401171	9.5905617	3736	10.4094383	10.0306788	492	9.9693212	43
18	9.5602071	3242	10.4397929	9.5909351	3734	10.4090649	10.0307280	492	9.9692720	42
19	9.5605310	3239	10.4394690	9.5913082	3731	10.4086918	10.0307773	493	9.9692227	41
20	9.5608546	3236	10.4391454	9.5916812	3730	10.4083188	10.0308266	493	9.9691734	40
21	9.5611779	3233	10.4388221	9.5920539	3727	10.4079461	10.0308759	493	9.9691241	39
22	9.5615010	3231	10.4384990	9.5924263	3724	10.4075737	10.0309254	495	9.9690746	38
23	9.5618237	3227	10.4381763	9.5927985	3722	10.4072015	10.0309748	494	9.9690252	37
24	9.5621462	3225	10.4378538	9.5931705	3720	10.4068295	10.0310243	495	9.9689757	36
25	9.5624685	3223	10.4375315	9.5935423	3718	10.4064577	10.0310738	495	9.9689262	35
26	9.5627904	3219	10.4372096	9.5939138	3715	10.4060862	10.0311234	496	9.9688766	34
27	9.5631121	3217	10.4368879	9.5942851	3713	10.4057149	10.0311730	496	9.9688270	33
28	9.5634335	3214	10.4365665	9.5946561	3710	10.4053439	10.0312227	497	9.9687773	32
29	9.5637546	3211	10.4362454	9.5950269	3708	10.4049731	10.0312724	497	9.9687276	31
30	9.5640754	3208	10.4359246	9.5953975	3706	10.4046025	10.0313221	497	9.9686779	30
31	9.5643960	3206	10.4356040	9.5957679	3704	10.4042321	10.0313719	498	9.9686281	29
32	9.5647163	3203	10.4352837	9.5961380	3701	10.4038620	10.0314217	498	9.9685783	28
33	9.5650363	3200	10.4349637	9.5965079	3699	10.4034921	10.0314716	499	9.9685284	27
34	9.5653561	3198	10.4346439	9.5968776	3697	10.4031224	10.0315215	499	9.9684785	26
35	9.5656756	3195	10.4343244	9.5972470	3694	10.4027530	10.0315714	499	9.9684286	25
36	9.5659948	3192	10.4340052	9.5976162	3692	10.4023838	10.0316214	500	9.9683786	24
37	9.5663137	3189	10.4336863	9.5979852	3690	10.4020148	10.0316715	501	9.9683285	23
38	9.5666324	3187	10.4333676	9.5983540	3688	10.4016460	10.0317216	501	9.9682784	22
39	9.5669508	3184	10.4330492	9.5987225	3685	10.4012775	10.0317717	501	9.9682283	21
40	9.5672689	3181	10.4327311	9.5990908	3683	10.4009092	10.0318219	502	9.9681781	20
41	9.5675868	3179	10.4324132	9.5994588	3680	10.4005412	10.0318721	502	9.9681279	19
42	9.5679044	3176	10.4320956	9.5998267	3679	10.4001733	10.0319223	502	9.9680777	18
43	9.5682217	3173	10.4317783	9.6001943	3676	10.3998057	10.0319726	503	9.9680274	17
44	9.5685387	3170	10.4314613	9.6005617	3674	10.3994383	10.0320229	503	9.9679771	16
45	9.5688555	3168	10.4311445	9.6009289	3672	10.3990711	10.0320733	504	9.9679267	15
46	9.5691721	3166	10.4308279	9.6012958	3669	10.3987042	10.0321237	504	9.9678763	14
47	9.5694883	3162	10.4305117	9.6016625	3667	10.3983375	10.0321742	505	9.9678258	13
48	9.5698043	3160	10.4301957	9.6020290	3665	10.3979710	10.0322247	505	9.9677753	12
49	9.5701200	3157	10.4298800	9.6023953	3663	10.3976047	10.0322753	506	9.9677247	11
50	9.5704355	3155	10.4295645	9.6027613	3660	10.3972387	10.0323259	506	9.9676741	10
51	9.5707506	3151	10.4292494	9.6031271	3658	10.3968729	10.0323765	506	9.9676235	9
52	9.5710656	3150	10.4289344	9.6034927	3656	10.3965073	10.0324272	507	9.9675728	8
53	9.5713802	3146	10.4286198	9.6038581	3654	10.3961419	10.0324779	507	9.9675221	7
54	9.5716946	3144	10.4283054	9.6042233	3652	10.3957767	10.0325287	508	9.9674713	6
55	9.5720087	3141	10.4279913	9.6045882	3649	10.3954118	10.0325795	508	9.9674205	5
56	9.5723226	3139	10.4276774	9.6049529	3647	10.3950471	10.0326303	508	9.9673697	4
57	9.5726362	3136	10.4273638	9.6053174	3645	10.3946826	10.0326812	509	9.9673188	3
58	9.5729495	3133	10.4270505	9.6056817	3643	10.3943183	10.0327321	509	9.9672679	2
59	9.5732626	3131	10.4267374	9.6060457	3640	10.3939543	10.0327831	510	9.9672169	1
60	9.5735754	3128	10.4264246	9.6064096	3639	10.3935904	10.0328341	510	9.9671659	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

111° 68°

22° 157°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.5735754		10.4264246	9.6064096		10.3935904	10.0328341		9.9671659	60
1	9.5738880	3126	10.4261120	9.6067732	3636	10.3932268	10.0328852	511	9.9671148	59
2	9.5742003	3123	10.4257997	9.6071366	3634	10.3928634	10.0329363	511	9.9670637	58
3	9.5745123	3120	10.4254877	9.6074997	3631	10.3925003	10.0329875	512	9.9670125	57
4	9.5748240	3117	10.4251760	9.6078627	3630	10.3921373	10.0330386	511	9.9669614	56
5	9.5751356	3116	10.4248644	9.6082254	3627	10.3917746	10.0330899	513	9.9669101	55
6	9.5754468	3112	10.4245532	9.6085880	3626	10.3914120	10.0331412	513	9.9668588	54
		3110			3623			513		
7	9.5757578		10.4242422	9.6089503		10.3910497	10.0331925		9.9668075	53
8	9.5760685	3107	10.4239315	9.6093124	3621	10.3906876	10.0332438	513	9.9667562	52
9	9.5763790	3105	10.4236210	9.6096742	3618	10.3903258	10.0332952	514	9.9667048	51
10	9.5766892	3102	10.4233108	9.6100359	3617	10.3899641	10.0333467	515	9.9666533	50
11	9.5769991	3099	10.4230009	9.6103973	3614	10.3896027	10.0333982	515	9.9666018	49
12	9.5773088	3097	10.4226912	9.6107586	3613	10.3892414	10.0334497	515	9.9665503	48
		3095			3610			516		
13	9.5776183		10.4223817	9.6111196		10.3888804	10.0335013		9.9664987	47
14	9.5779275	3092	10.4220725	9.6114804	3608	10.3885196	10.0335529	516	9.9664471	46
15	9.5782364	3089	10.4217636	9.6118409	3605	10.3881591	10.0336046	517	9.9663954	45
16	9.5785450	3086	10.4214550	9.6122013	3604	10.3877987	10.0336563	517	9.9663437	44
17	9.5788535	3085	10.4211465	9.6125615	3602	10.3874385	10.0337080	517	9.9662920	43
18	9.5791616	3081	10.4208384	9.6129214	3599	10.3870786	10.0337598	518	9.9662402	42
		3079			3598			518		
19	9.5794695		10.4205305	9.6132812		10.3867188	10.0338116		9.9661884	41
20	9.5797772	3077	10.4202228	9.6136407	3595	10.3863593	10.0338635	519	9.9661365	40
21	9.5800845	3073	10.4199155	9.6140000	3593	10.3860000	10.0339154	519	9.9660846	39
22	9.5803917	3072	10.4196083	9.6143591	3591	10.3856409	10.0339674	520	9.9660326	38
23	9.5806986	3069	10.4193014	9.6147180	3589	10.3852820	10.0340194	520	9.9659806	37
24	9.5810052	3066	10.4189948	9.6150766	3586	10.3849234	10.0340715	521	9.9659285	36
		3064			3585			521		
25	9.5813116		10.4186884	9.6154351		10.3845649	10.0341236		9.9658764	35
26	9.5816177	3061	10.4183823	9.6157934	3583	10.3842066	10.0341757	521	9.9658243	34
27	9.5819236	3059	10.4180764	9.6161514	3580	10.3838486	10.0342279	522	9.9657721	33
28	9.5822292	3056	10.4177708	9.6165093	3579	10.3834907	10.0342801	522	9.9657199	32
29	9.5825345	3053	10.4174655	9.6168669	3576	10.3831331	10.0343323	522	9.9656677	31
30	9.5828397	3052	10.4171603	9.6172243	3574	10.3827757	10.0343847	524	9.9656153	30
		3048			3572			523		
31	9.5831445		10.4168555	9.6175815		10.3824185	10.0344370		9.9655630	29
32	9.5834491	3046	10.4165509	9.6179385	3570	10.3820615	10.0344894	524	9.9655106	28
33	9.5837535	3044	10.4162465	9.6182953	3568	10.3817047	10.0345418	524	9.9654582	27
34	9.5840576	3041	10.4159424	9.6186519	3566	10.3813481	10.0345943	525	9.9654057	26
35	9.5843615	3039	10.4156385	9.6190083	3564	10.3809917	10.0346468	525	9.9653532	25
36	9.5846651	3036	10.4153349	9.6193645	3562	10.3806355	10.0346994	526	9.9653006	24
		3034			3560			526		
37	9.5849685		10.4150315	9.6197205		10.3802795	10.0347520		9.9652480	23
38	9.5852716	3031	10.4147284	9.6200762	3557	10.3799238	10.0348047	527	9.9651953	22
39	9.5855745	3029	10.4144255	9.6204318	3556	10.3795682	10.0348574	527	9.9651426	21
40	9.5858771	3026	10.4141229	9.6207872	3554	10.3792128	10.0349101	527	9.9650899	20
41	9.5861795	3024	10.4138205	9.6211423	3551	10.3788577	10.0349629	528	9.9650371	19
42	9.5864816	3021	10.4135184	9.6214973	3550	10.3785027	10.0350157	528	9.9649843	18
		3019			3547			529		
43	9.5867835		10.4132165	9.6218520		10.3781480	10.0350686		9.9649314	17
44	9.5870851	3016	10.4129149	9.6222066	3546	10.3777934	10.0351215	529	9.9648785	16
45	9.5873865	3014	10.4126135	9.6225609	3543	10.3774391	10.0351744	529	9.9648256	15
46	9.5876876	3011	10.4123124	9.6229150	3541	10.3770850	10.0352274	530	9.9647726	14
47	9.5879885	3009	10.4120115	9.6232690	3540	10.3767310	10.0352805	531	9.9647195	13
48	9.5882892	3007	10.4117108	9.6236227	3537	10.3763773	10.0353335	530	9.9646665	12
		3004			3536			532		
49	9.5885896		10.4114104	9.6239763		10.3760237	10.0353867		9.9646133	11
50	9.5888897	3001	10.4111103	9.6243296	3535	10.3756704	10.0354398	531	9.9645602	10
51	9.5891897	3000	10.4108103	9.6246827	3531	10.3753173	10.0354931	533	9.9645069	9
52	9.5894893	2996	10.4105107	9.6250356	3529	10.3749644	10.0355463	532	9.9644537	8
53	9.5897888	2995	10.4102112	9.6253884	3528	10.3746116	10.0355996	533	9.9644004	7
54	9.5900880	2992	10.4099120	9.6257409	3525	10.3742591	10.0356530	534	9.9643470	6
		2989			3523			533		
55	9.5903869		10.4096131	9.6260932		10.3739068	10.0357063		9.9642937	5
56	9.5906856	2987	10.4093144	9.6264454	3522	10.3735546	10.0357598	535	9.9642402	4
57	9.5909841	2985	10.4090159	9.6267973	3519	10.3732027	10.0358132	534	9.9641868	3
58	9.5912823	2982	10.4087177	9.6271491	3518	10.3728509	10.0358668	536	9.9641332	2
59	9.5915803	2980	10.4084197	9.6275006	3515	10.3724994	10.0359203	535	9.9640797	1
60	9.5918780	2977	10.4081220	9.6278519	3513	10.3721481	10.0359739	536	9.9640261	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

112° 67°

23°											156°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.5918780		10.4081220	9.6278519		10.3721481	10.0359739		9.9640261	60
1	9.5921755	2975	10.4078245	9.6282031	3512	10.3717969	10.0360276	537	9.9639724	59
2	9.5924728	2973	10.4075272	9.6285540	3509	10.3714460	10.0360813	537	9.9639187	58
3	9.5927698	2970	10.4072302	9.6289048	3508	10.3710952	10.0361350	537	9.9638650	57
4	9.5930666	2968	10.4069334	9.6292553	3505	10.3707447	10.0361888	538	9.9638112	56
5	9.5933631	2965	10.4066369	9.6296057	3504	10.3703943	10.0362426	538	9.9637574	55
6	9.5936594	2963	10.4063406	9.6299558	3501	10.3700442	10.0362964	538	9.9637036	54
7	9.5939555	2961	10.4060445	9.6303058	3500	10.3696942	10.0363504	540	9.9636496	53
8	9.5942513	2958	10.4057487	9.6306556	3498	10.3693444	10.0364043	539	9.9635957	52
9	9.5945469	2956	10.4054531	9.6310052	3496	10.3689948	10.0364583	540	9.9635417	51
10	9.5948422	2953	10.4051578	9.6313545	3493	10.3686456	10.0365123	540	9.9634877	50
11	9.5951373	2951	10.4048627	9.6317037	3492	10.3682963	10.0365664	541	9.9634336	49
12	9.5954322	2949	10.4045678	9.6320527	3490	10.3679473	10.0366205	541	9.9633795	48
13	9.5957268	2946	10.4042732	9.6324015	3488	10.3675985	10.0366747	542	9.9633253	47
14	9.5960212	2944	10.4039788	9.6327501	3486	10.3672499	10.0367289	542	9.9632711	46
15	9.5963154	2942	10.4036846	9.6330985	3484	10.3669015	10.0367832	543	9.9632168	45
16	9.5966093	2939	10.4033907	9.6334468	3483	10.3665532	10.0368375	543	9.9631625	44
17	9.5969030	2937	10.4030970	9.6337948	3480	10.3662052	10.0368918	543	9.9631082	43
18	9.5971965	2935	10.4028035	9.6341426	3478	10.3658574	10.0369462	544	9.9630538	42
19	9.5974897	2932	10.4025103	9.6344903	3477	10.3655097	10.0370006	544	9.9629994	41
20	9.5977827	2930	10.4022173	9.6348378	3475	10.3651622	10.0370551	545	9.9629449	40
21	9.5980754	2927	10.4019246	9.6351850	3472	10.3648150	10.0371096	545	9.9628904	39
22	9.5983679	2925	10.4016321	9.6355321	3471	10.3644679	10.0371642	546	9.9628358	38
23	9.5986602	2923	10.4013398	9.6358790	3469	10.3641210	10.0372188	546	9.9627812	37
24	9.5989523	2921	10.4010477	9.6362257	3467	10.3637743	10.0372734	546	9.9627266	36
25	9.5992441	2918	10.4007589	9.6365722	3465	10.3634278	10.0373281	547	9.9626719	35
26	9.5995357	2916	10.4004643	9.6369185	3463	10.3630815	10.0373828	547	9.9626172	34
27	9.5998270	2913	10.4001730	9.6372646	3461	10.3627354	10.0374376	548	9.9625624	33
28	9.6001181	2911	10.3998819	9.6376106	3460	10.3623894	10.0374924	548	9.9625076	32
29	9.6004090	2909	10.3995910	9.6379563	3457	10.3620437	10.0375473	549	9.9624527	31
30	9.6006997	2907	10.3993003	9.6383019	3456	10.3616981	10.0376022	549	9.9623978	30
31	9.6009901	2904	10.3990099	9.6386473	3454	10.3613527	10.0376572	550	9.9623428	29
32	9.6012803	2902	10.3987197	9.6389925	3452	10.3610075	10.0377122	550	9.9622878	28
33	9.6015703	2900	10.3984297	9.6393375	3450	10.3606625	10.0377672	550	9.9622328	27
34	9.6018600	2897	10.3981400	9.6396823	3448	10.3603177	10.0378223	551	9.9621777	26
35	9.6021495	2895	10.3978505	9.6400269	3446	10.3599731	10.0378774	551	9.9621226	25
36	9.6024388	2893	10.3975612	9.6403714	3445	10.3596286	10.0379326	552	9.9620674	24
37	9.6027278	2890	10.3972722	9.6407156	3442	10.3592844	10.0379878	552	9.9620122	23
38	9.6030166	2888	10.3969834	9.6410597	3441	10.3589403	10.0380431	553	9.9619569	22
39	9.6033052	2886	10.3966948	9.6414036	3439	10.3585964	10.0380984	553	9.9619016	21
40	9.6035936	2884	10.3964064	9.6417473	3437	10.3582527	10.0381537	553	9.9618463	20
41	9.6038817	2881	10.3961183	9.6420908	3435	10.3579092	10.0382091	554	9.9617909	19
42	9.6041696	2879	10.3958304	9.6424342	3434	10.3575658	10.0382645	554	9.9617355	18
43	9.6044573	2877	10.3955427	9.6427773	3431	10.3572227	10.0383200	555	9.9616800	17
44	9.6047448	2875	10.3952552	9.6431203	3430	10.3568797	10.0383755	555	9.9616245	16
45	9.6050320	2872	10.3949680	9.6434631	3428	10.3565369	10.0384311	556	9.9615689	15
46	9.6053190	2870	10.3946810	9.6438057	3426	10.3561943	10.0384867	556	9.9615133	14
47	9.6056057	2867	10.3943943	9.6441481	3424	10.3558519	10.0385424	557	9.9614576	13
48	9.6058923	2866	10.3941077	9.6444903	3422	10.3555097	10.0385980	556	9.9614020	12
49	9.6061786	2863	10.3938214	9.6448324	3421	10.3551676	10.0386538	558	9.9613462	11
50	9.6064647	2861	10.3935353	9.6451743	3419	10.3548257	10.0387096	558	9.9612904	10
51	9.6067506	2859	10.3932494	9.6455160	3417	10.3544840	10.0387654	558	9.9612346	9
52	9.6070362	2856	10.3929638	9.6458575	3415	10.3541425	10.0388213	559	9.9611787	8
53	9.6073216	2854	10.3926784	9.6461988	3413	10.3538012	10.0388772	559	9.9611228	7
54	9.6076068	2852	10.3923932	9.6465400	3412	10.3534600	10.0389332	560	9.9610668	6
55	9.6078918	2850	10.3921082	9.6468810	3410	10.3531190	10.0389892	560	9.9610108	5
56	9.6081765	2847	10.3918235	9.6472217	3407	10.3527783	10.0390452	561	9.9609548	4
57	9.6084611	2846	10.3915389	9.6475624	3407	10.3524376	10.0391013	561	9.9608987	3
58	9.6087454	2843	10.3912546	9.6479028	3404	10.3520972	10.0391574	562	9.9608426	2
59	9.6090294	2840	10.3909706	9.6482431	3403	10.3517569	10.0392136	562	9.9607864	1
60	9.6093133	2839	10.3906867	9.6485831	3400	10.3514169	10.0392698	562	9.9607302	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
112°										66°

24° 155°

/	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	/
0	9.6093133		10.3906867	9.6485831		10.3514169	10.0392698		9.9607302	60
1	9.6095969	2836	10.3904031	9.6489230	3399	10.3510770	10.0393261	563	9.9606739	59
2	9.6098803	2834	10.3901197	9.6492628	3398	10.3507372	10.0393824	563	9.9606176	58
3	9.6101635	2832	10.3898365	9.6496023	3395	10.3503977	10.0394388	564	9.9605612	57
4	9.6104465	2830	10.3895535	9.6499417	3394	10.3500583	10.0394952	564	9.9605048	56
5	9.6107293	2828	10.3892707	9.6502809	3392	10.3497191	10.0395516	564	9.9604484	55
6	9.6110118	2825	10.3889882	9.6506199	3390	10.3493801	10.0396081	565	9.9603919	54
7	9.6112941	2823	10.3887059	9.6509587	3388	10.3490413	10.0396646	565	9.9603354	53
8	9.6115762	2821	10.3884238	9.6512974	3387	10.3487026	10.0397212	566	9.9602788	52
9	9.6118580	2818	10.3881420	9.6516359	3385	10.3483641	10.0397778	566	9.9602222	51
10	9.6121397	2817	10.3878603	9.6519742	3383	10.3480258	10.0398345	567	9.9601655	50
11	9.6124211	2814	10.3875789	9.6523123	3381	10.3476877	10.0398912	567	9.9601088	49
12	9.6127023	2812	10.3872977	9.6526503	3380	10.3473497	10.0399480	568	9.9600520	48
13	9.6129833	2810	10.3870167	9.6529881	3378	10.3470119	10.0400048	568	9.9599952	47
14	9.6132641	2808	10.3867359	9.6533257	3376	10.3466743	10.0400616	569	9.9599384	46
15	9.6135446	2805	10.3864554	9.6536631	3374	10.3463369	10.0401185	569	9.9598815	45
16	9.6138250	2804	10.3861750	9.6540004	3373	10.3459996	10.0401754	570	9.9598246	44
17	9.6141051	2801	10.3858949	9.6543375	3371	10.3456625	10.0402324	570	9.9597676	43
18	9.6143850	2799	10.3856150	9.6546744	3369	10.3453256	10.0402894	571	9.9597106	42
19	9.6146647	2797	10.3853353	9.6550112	3368	10.3449888	10.0403465	571	9.9596535	41
20	9.6149441	2794	10.3850559	9.6553477	3365	10.3446523	10.0404036	571	9.9595964	40
21	9.6152234	2793	10.3847766	9.6556841	3364	10.3443159	10.0404607	572	9.9595393	39
22	9.6155024	2790	10.3844976	9.6560204	3363	10.3439796	10.0405179	573	9.9594821	38
23	9.6157812	2788	10.3842188	9.6563564	3360	10.3436436	10.0405752	573	9.9594248	37
24	9.6160599	2787	10.3839401	9.6566923	3359	10.3433077	10.0406325	573	9.9593675	36
25	9.6163382	2783	10.3836618	9.6570280	3357	10.3429720	10.0406898	574	9.9593102	35
26	9.6166164	2782	10.3833836	9.6573636	3356	10.3426364	10.0407472	574	9.9592528	34
27	9.6168944	2780	10.3831056	9.6576989	3353	10.3423011	10.0408046	574	9.9591954	33
28	9.6171721	2777	10.3828279	9.6580341	3352	10.3419659	10.0408620	575	9.9591380	32
29	9.6174496	2775	10.3825504	9.6583692	3351	10.3416308	10.0409195	576	9.9590805	31
30	9.6177270	2774	10.3822730	9.6587041	3349	10.3412959	10.0409771	576	9.9590229	30
31	9.6180041	2771	10.3819959	9.6590387	3346	10.3409613	10.0410347	576	9.9589653	29
32	9.6182809	2768	10.3817191	9.6593733	3346	10.3406267	10.0410923	577	9.9589077	28
33	9.6185576	2767	10.3814424	9.6597076	3343	10.3402924	10.0411500	577	9.9588500	27
34	9.6188341	2765	10.3811659	9.6600418	3342	10.3399582	10.0412077	578	9.9587923	26
35	9.6191103	2762	10.3808897	9.6603758	3340	10.3396242	10.0412655	578	9.9587345	25
36	9.6193864	2761	10.3806136	9.6607097	3339	10.3392903	10.0413233	579	9.9586767	24
37	9.6196622	2758	10.3803378	9.6610434	3337	10.3389566	10.0413812	579	9.9586188	23
38	9.6199378	2756	10.3800622	9.6613769	3335	10.3386231	10.0414391	579	9.9585609	22
39	9.6202132	2754	10.3797868	9.6617103	3334	10.3382897	10.0414970	580	9.9585030	21
40	9.6204884	2752	10.3795116	9.6620434	3331	10.3379566	10.0415550	581	9.9584450	20
41	9.6207634	2750	10.3792366	9.6623765	3331	10.3376235	10.0416131	581	9.9583869	19
42	9.6210382	2748	10.3789618	9.6627093	3328	10.3372907	10.0416712	581	9.9583288	18
43	9.6213127	2745	10.3786873	9.6630420	3327	10.3369580	10.0417293	582	9.9582707	17
44	9.6215871	2744	10.3784129	9.6633745	3325	10.3366255	10.0417875	582	9.9582125	16
45	9.6218612	2741	10.3781388	9.6637069	3324	10.3362931	10.0418457	582	9.9581543	15
46	9.6221351	2739	10.3778649	9.6640391	3322	10.3359609	10.0419039	583	9.9580961	14
47	9.6224088	2737	10.3775912	9.6643711	3320	10.3356289	10.0419622	584	9.9580378	13
48	9.6226824	2736	10.3773176	9.6647030	3319	10.3352970	10.0420206	584	9.9579794	12
49	9.6229557	2733	10.3770443	9.6650346	3316	10.3349654	10.0420790	584	9.9579210	11
50	9.6232287	2730	10.3767713	9.6653662	3316	10.3346338	10.0421374	585	9.9578625	10
51	9.6235016	2729	10.3764984	9.6656975	3313	10.3343025	10.0421959	585	9.9578041	9
52	9.6237743	2727	10.3762257	9.6660288	3313	10.3339712	10.0422544	586	9.9577456	8
53	9.6240468	2725	10.3759532	9.6663598	3310	10.3336402	10.0423130	586	9.9576870	7
54	9.6243190	2722	10.3756810	9.6666907	3309	10.3333093	10.0423716	587	9.9576284	6
55	9.6245911	2721	10.3754089	9.6670214	3307	10.3329786	10.0424303	587	9.9575697	5
56	9.6248629	2718	10.3751371	9.6673519	3305	10.3326481	10.0424890	588	9.9575110	4
57	9.6251346	2717	10.3748654	9.6676823	3304	10.3323177	10.0425478	588	9.9574522	3
58	9.6254060	2714	10.3745940	9.6680126	3303	10.3319874	10.0426066	588	9.9573934	2
59	9.6256772	2712	10.3743228	9.6683426	3300	10.3316574	10.0426654	589	9.9573346	1
60	9.6259483	2711	10.3740517	9.6686725	3299	10.3313275	10.0427243		9.9572757	0
/	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	/

114° 65°

25° 154°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6259483		10.3740517	9.6686725		10.3313275	10.0427243		9.9572757	60
		2708			3298			589		
1	9.6262191	2706	10.3737809	9.6690023	3296	10.3309977	10.0427832	590	9.9572168	59
2	9.6264897	2704	10.3735103	9.6693319	3294	10.3306681	10.0428422	590	9.9571578	58
3	9.6267601	2702	10.3732399	9.6696613	3293	10.3303387	10.0429012	591	9.9570988	57
4	9.6270303	2700	10.3729697	9.6699906	3291	10.3300094	10.0429603	591	9.9570397	56
5	9.6273003	2698	10.3726997	9.6703197	3289	10.3296803	10.0430194	591	9.9569806	55
6	9.6275701		10.3724299	9.6706486		10.3293514	10.0430785		9.9569215	54
		2696			3288			592		
7	9.6278397	2693	10.3721603	9.6709774	3286	10.3290226	10.0431377	593	9.9568623	53
8	9.6281090	2692	10.3718910	9.6713060	3285	10.3286940	10.0431970	593	9.9568030	52
9	9.6283782	2690	10.3716218	9.6716345	3283	10.3283655	10.0432563	593	9.9567437	51
10	9.6286472	2688	10.3713528	9.6719628	3282	10.3280372	10.0433156	594	9.9566844	50
11	9.6289160	2685	10.3710840	9.6722910	3280	10.3277090	10.0433750	594	9.9566250	49
12	9.6291845		10.3708155	9.6726190		10.3273810	10.0434344		9.9565656	48
		2684			3278			595		
13	9.6294529	2682	10.3705471	9.6729468	3277	10.3270532	10.0434939	595	9.9565061	47
14	9.6297211	2679	10.3702789	9.6732745	3275	10.3267255	10.0435534	596	9.9564466	46
15	9.6299890	2678	10.3700110	9.6736020	3274	10.3263980	10.0436130	596	9.9563870	45
16	9.6302568	2675	10.3697432	9.6739294	3272	10.3260706	10.0436726	596	9.9563274	44
17	9.6305243	2674	10.3694757	9.6742566	3270	10.3257434	10.0437322	597	9.9562678	43
18	9.6307917		10.3692083	9.6745836		10.3254164	10.0437919		9.9562081	42
		2672			3269			598		
19	9.6310589	2669	10.3689411	9.6749105	3267	10.3250895	10.0438517	597	9.9561483	41
20	9.6313258	2668	10.3686742	9.6752372	3266	10.3247628	10.0439114	599	9.9560886	40
21	9.6315926	2665	10.3684074	9.6755638	3265	10.3244362	10.0439713	598	9.9560287	39
22	9.6318591	2664	10.3681409	9.6758903	3262	10.3241097	10.0440311	600	9.9559689	38
23	9.6321255	2661	10.3678745	9.6762165	3261	10.3237835	10.0440911	599	9.9559089	37
24	9.6323916		10.3676084	9.6765426		10.3234574	10.0441510		9.9558490	36
		2660			3260			600		
25	9.6326576	2657	10.3673424	9.6768686	3258	10.3231314	10.0442110	601	9.9557890	35
26	9.6329233	2656	10.3670767	9.6771944	3257	10.3228056	10.0442711	601	9.9557289	34
27	9.6331889	2653	10.3668111	9.6775201	3255	10.3224799	10.0443312	601	9.9556688	33
28	9.6334542	2652	10.3665458	9.6778456	3253	10.3221544	10.0443913	602	9.9556087	32
29	9.6337194	2650	10.3662806	9.6781709	3252	10.3218291	10.0444515	603	9.9555485	31
30	9.6339844		10.3660156	9.6784961		10.3215039	10.0445118		9.9554882	30
		2647			3250			602		
31	9.6342491	2646	10.3657509	9.6788211	3249	10.3211789	10.0445720	604	9.9554280	29
32	9.6345137	2643	10.3654863	9.6791460	3248	10.3208540	10.0446324	603	9.9553676	28
33	9.6347780	2642	10.3652220	9.6794708	3245	10.3205292	10.0446927	604	9.9553073	27
34	9.6350422	2640	10.3649578	9.6797953	3245	10.3202047	10.0447531	605	9.9552469	26
35	9.6353062	2637	10.3646938	9.6801198	3242	10.3198802	10.0448136	605	9.9551864	25
36	9.6355699		10.3644301	9.6804440		10.3195560	10.0448741		9.9551259	24
		2636			3242			606		
37	9.6358335	2634	10.3641665	9.6807682	3239	10.3192318	10.0449347	606	9.9550653	23
38	9.6360969	2632	10.3639031	9.6810921	3239	10.3189079	10.0449953	606	9.9550047	22
39	9.6363601	2630	10.3636399	9.6814160	3236	10.3185840	10.0450559	607	9.9549441	21
40	9.6366231	2628	10.3633769	9.6817396	3236	10.3182604	10.0451166	607	9.9548834	20
41	9.6368859	2625	10.3631141	9.6820632	3233	10.3179368	10.0451773	608	9.9548227	19
42	9.6371484		10.3628516	9.6823865		10.3176135	10.0452381		9.9547619	18
		2624			3233			608		
43	9.6374108	2623	10.3625892	9.6827098	3230	10.3172902	10.0452989	609	9.9547011	17
44	9.6376731	2620	10.3623269	9.6830328	3229	10.3169672	10.0453598	609	9.9546402	16
45	9.6379351	2618	10.3620649	9.6833557	3228	10.3166443	10.0454207	609	9.9545793	15
46	9.6381969	2616	10.3618031	9.6836785	3226	10.3163215	10.0454816	610	9.9545184	14
47	9.6384585	2614	10.3615415	9.6840011	3225	10.3159989	10.0455426	611	9.9544574	13
48	9.6387199		10.3612801	9.6843236		10.3156764	10.0456037		9.9543963	12
		2613			3223			611		
49	9.6389812	2610	10.3610188	9.6846459	3222	10.3153541	10.0456648	611	9.9543352	11
50	9.6392422	2608	10.3607578	9.6849681	3220	10.3150319	10.0457259	612	9.9542741	10
51	9.6395030	2607	10.3604970	9.6852901	3219	10.3147099	10.0457871	612	9.9542129	9
52	9.6397637	2604	10.3602363	9.6856120	3218	10.3143880	10.0458483	613	9.9541517	8
53	9.6400241	2603	10.3599759	9.6859338	3215	10.3140662	10.0459096	613	9.9540904	7
54	9.6402844		10.3597156	9.6862553		10.3137447	10.0459709		9.9540291	6
		2601			3215			614		
55	9.6405445	2599	10.3594555	9.6865768	3213	10.3134232	10.0460323	614	9.9539677	5
56	9.6408044	2596	10.3591956	9.6868981	3211	10.3131019	10.0460937	615	9.9539063	4
57	9.6410640	2595	10.3589360	9.6872192	3210	10.3127808	10.0461552	615	9.9538448	3
58	9.6413235	2593	10.3586765	9.6875402	3209	10.3124598	10.0462167	615	9.9537833	2
59	9.6415828	2592	10.3584172	9.6878611	3207	10.3121389	10.0462782	616	9.9537218	1
60	9.6418420		10.3581580	9.6881818		10.3118182	10.0463398		9.9536602	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

115° 64°

26° 153°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6418420		10.3581580	9.6881818		10.3118182	10.0463398		9.9536602	60
1	9.6421009	2589	10.3578991	9.6885023	3205	10.3114977	10.0464015	617	9.9535985	59
2	9.6423596	2587	10.3576404	9.6888227	3204	10.3111773	10.0464631	616	9.9535369	58
3	9.6426182	2586	10.3573818	9.6891430	3203	10.3108570	10.0465249	618	9.9534751	57
4	9.6428765	2583	10.3571235	9.6894631	3201	10.3105369	10.0465866	617	9.9534134	56
5	9.6431347	2582	10.3568653	9.6897831	3200	10.3102169	10.0466485	619	9.9533515	55
6	9.6433926	2579	10.3566074	9.6901030	3199	10.3098970	10.0467103	618	9.9532897	54
7	9.6436504	2578	10.3563496	9.6904226	3196	10.3095774	10.0467722	619	9.9532278	53
8	9.6439080	2576	10.3560920	9.6907422	3196	10.3092578	10.0468342	620	9.9531658	52
9	9.6441654	2574	10.3558346	9.6910616	3194	10.3089384	10.0468962	620	9.9531038	51
10	9.6444226	2572	10.3555774	9.6913809	3193	10.3086191	10.0469582	620	9.9530418	50
11	9.6446796	2570	10.3553204	9.6917000	3191	10.3083000	10.0470203	621	9.9529797	49
12	9.6449365	2569	10.3550635	9.6920189	3189	10.3079811	10.0470825	622	9.9529175	48
13	9.6451931	2566	10.3548069	9.6923378	3189	10.3076622	10.0471447	622	9.9528553	47
14	9.6454496	2565	10.3545504	9.6926565	3187	10.3073435	10.0472069	622	9.9527931	46
15	9.6457058	2562	10.3542942	9.6929750	3185	10.3070250	10.0472692	623	9.9527308	45
16	9.6459619	2561	10.3540381	9.6932934	3184	10.3067066	10.0473315	623	9.9526685	44
17	9.6462178	2559	10.3537822	9.6936117	3183	10.3063883	10.0473939	624	9.9526061	43
18	9.6464735	2557	10.3535265	9.6939298	3181	10.3060702	10.0474563	624	9.9525437	42
19	9.6467290	2555	10.3532710	9.6942478	3180	10.3057522	10.0475187	624	9.9524813	41
20	9.6469844	2554	10.3530156	9.6945656	3178	10.3054344	10.0475812	625	9.9524188	40
21	9.6472395	2551	10.3527605	9.6948833	3177	10.3051167	10.0476438	626	9.9523562	39
22	9.6474945	2550	10.3525055	9.6952009	3176	10.3047991	10.0477064	626	9.9522936	38
23	9.6477492	2547	10.3522508	9.6955183	3174	10.3044817	10.0477690	626	9.9522310	37
24	9.6480038	2546	10.3519962	9.6958355	3172	10.3041645	10.0478317	627	9.9521683	36
25	9.6482582	2544	10.3517418	9.6961527	3172	10.3038473	10.0478945	628	9.9521055	35
26	9.6485124	2542	10.3514876	9.6964697	3170	10.3035303	10.0479572	627	9.9520428	34
27	9.6487665	2541	10.3512335	9.6967865	3168	10.3032135	10.0480201	629	9.9519799	33
28	9.6490203	2538	10.3509797	9.6971032	3167	10.3028968	10.0480829	628	9.9519171	32
29	9.6492740	2537	10.3507260	9.6974198	3166	10.3025802	10.0481459	630	9.9518541	31
30	9.6495274	2534	10.3504726	9.6977363	3165	10.3022637	10.0482088	629	9.9517912	30
31	9.6497807	2533	10.3502193	9.6980526	3163	10.3019474	10.0482718	630	9.9517282	29
32	9.6500338	2531	10.3499662	9.6983687	3161	10.3016313	10.0483349	631	9.9516651	28
33	9.6502868	2530	10.3497132	9.6986847	3160	10.3013153	10.0483980	631	9.9516020	27
34	9.6505395	2527	10.3494605	9.6990006	3159	10.3009994	10.0484611	631	9.9515389	26
35	9.6507920	2525	10.3492080	9.6993164	3158	10.3006836	10.0485243	632	9.9514757	25
36	9.6510444	2524	10.3489556	9.6996320	3156	10.3003680	10.0485876	633	9.9514124	24
37	9.6512966	2522	10.3487034	9.6999474	3154	10.3000526	10.0486508	632	9.9513492	23
38	9.6515486	2520	10.3484514	9.7002628	3154	10.2997372	10.0487142	634	9.9512858	22
39	9.6518004	2518	10.3481996	9.7005780	3152	10.2994220	10.0487776	634	9.9512224	21
40	9.6520521	2517	10.3479479	9.7008930	3150	10.2991070	10.0488410	634	9.9511590	20
41	9.6523035	2514	10.3476965	9.7012080	3150	10.2987920	10.0489044	634	9.9510956	19
42	9.6525548	2513	10.3474452	9.7015227	3147	10.2984773	10.0489680	636	9.9510320	18
43	9.6528059	2511	10.3471941	9.7018374	3147	10.2981626	10.0490315	635	9.9509685	17
44	9.6530568	2509	10.3469432	9.7021519	3145	10.2978481	10.0490951	636	9.9509049	16
45	9.6533075	2507	10.3466925	9.7024663	3144	10.2975337	10.0491588	637	9.9508412	15
46	9.6535581	2506	10.3464419	9.7027805	3142	10.2972195	10.0492225	637	9.9507775	14
47	9.6538084	2503	10.3461916	9.7030946	3141	10.2969054	10.0492862	637	9.9507138	13
48	9.6540586	2502	10.3459414	9.7034086	3140	10.2965914	10.0493500	638	9.9506500	12
49	9.6543086	2500	10.3456914	9.7037225	3139	10.2962775	10.0494139	639	9.9505861	11
50	9.6545584	2498	10.3454416	9.7040362	3137	10.2959638	10.0494777	638	9.9505223	10
51	9.6548081	2497	10.3451919	9.7043497	3135	10.2956503	10.0495417	640	9.9504583	9
52	9.6550575	2494	10.3449425	9.7046632	3135	10.2953368	10.0496056	639	9.9503944	8
53	9.6553068	2493	10.3446932	9.7049765	3133	10.2950235	10.0496697	641	9.9503303	7
54	9.6555559	2491	10.3444441	9.7052897	3132	10.2947103	10.0497337	640	9.9502663	6
55	9.6558048	2489	10.3441952	9.7056027	3130	10.2943973	10.0497978	641	9.9502022	5
56	9.6560536	2488	10.3439464	9.7059156	3129	10.2940844	10.0498620	642	9.9501380	4
57	9.6563021	2485	10.3436979	9.7062284	3128	10.2937716	10.0499262	642	9.9500738	3
58	9.6565505	2484	10.3434495	9.7065410	3126	10.2934590	10.0499905	643	9.9500095	2
59	9.6567987	2482	10.3432013	9.7068535	3125	10.2931465	10.0500548	643	9.9499452	1
60	9.6570468	2481	10.3429532	9.7071659	3124	10.2928341	10.0501191	643	9.9498809	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

116° 63°

27° 152°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6570468		10.3429532	9.7071659						
		2478			3122	10.2922341	10.0501191	644	9.9498809	60
1	9.6572946	2477	10.3427054	9.7074781	3121	10.2922219	10.0501835	644	9.9498165	59
2	9.6575423	2475	10.3424577	9.7077902	3120	10.2922098	10.0502479	645	9.9497521	58
3	9.6577898	2473	10.3422102	9.7081022	3119	10.2918978	10.0503124	646	9.9496876	57
4	9.6580371	2471	10.3419629	9.7084141	3117	10.2915859	10.0503770	645	9.9496230	56
5	9.6582842	2470	10.3417158	9.7087258	3116	10.2912742	10.0504415	647	9.9495585	55
6	9.6585312		10.3414688	9.7090374		10.2909626	10.0505062		9.9494938	54
		2468			3114			646		
7	9.6587780		10.3412220	9.7093488		10.2906512	10.0505708		9.9494292	53
8	9.6590246	2466	10.3409754	9.7096601	3113	10.2903399	10.0506355	647	9.9493645	52
9	9.6592710	2464	10.3407290	9.7099713	3112	10.2900287	10.0507003	648	9.9492997	51
10	9.6595173	2463	10.3404827	9.7102824	3111	10.2897176	10.0507651	648	9.9492349	50
11	9.6597633	2460	10.3402367	9.7105933	3109	10.2894067	10.0508300	649	9.9491700	49
12	9.6600093	2460	10.3399907	9.7109041	3108	10.2890959	10.0508949	649	9.9491051	48
		2457			3107			649		
13	9.6602550		10.3397450	9.7112148		10.2887852	10.0509598		9.9490402	47
14	9.6605005	2455	10.3394995	9.7115254	3106	10.2884746	10.0510248	650	9.9489752	46
15	9.6607459	2454	10.3392541	9.7118358	3104	10.2881642	10.0510899	651	9.9489101	45
16	9.6609911	2452	10.3390089	9.7121461	3103	10.2878539	10.0511550	651	9.9488450	44
17	9.6612361	2450	10.3387639	9.7124562	3101	10.2875438	10.0512201	651	9.9487799	43
18	9.6614810	2449	10.3385190	9.7127662	3100	10.2872338	10.0512853	652	9.9487147	42
		2447			3099			652		
19	9.6617257		10.3382743	9.7130761		10.2869239	10.0513505		9.9486495	41
20	9.6619702	2445	10.3380298	9.7133859	3098	10.2866141	10.0514158	653	9.9485842	40
21	9.6622145	2443	10.3377855	9.7136956	3097	10.2863044	10.0514811	653	9.9485189	39
22	9.6624586	2441	10.3375414	9.7140051	3095	10.2859949	10.0515465	654	9.9484535	38
23	9.6627026	2440	10.3372974	9.7143145	3094	10.2856855	10.0516119	654	9.9483881	37
24	9.6629464	2438	10.3370536	9.7146237	3092	10.2853763	10.0516773	654	9.9483227	36
		2436			3092			655		
25	9.6631900		10.3368100	9.7149329		10.2850671	10.0517428		9.9482572	35
26	9.6634335	2435	10.3365665	9.7152419	3090	10.2847581	10.0518084	656	9.9481916	34
27	9.6636768	2433	10.3363232	9.7155508	3089	10.2844492	10.0518740	656	9.9481260	33
28	9.6639199	2431	10.3360801	9.7158595	3087	10.2841405	10.0519396	656	9.9480604	32
29	9.6641628	2429	10.3358372	9.7161682	3087	10.2838318	10.0520053	657	9.9479947	31
30	9.6644056	2428	10.3355944	9.7164767	3085	10.2835233	10.0520711	658	9.9479289	30
		2426			3084			658		
31	9.6646482		10.3353518	9.7167851		10.2832149	10.0521369		9.9478631	29
32	9.6648906	2424	10.3351094	9.7170933	3082	10.2829067	10.0522027	658	9.9477973	28
33	9.6651329	2423	10.3348671	9.7174014	3081	10.2825986	10.0522686	659	9.9477314	27
34	9.6653749	2420	10.3346251	9.7177094	3080	10.2822906	10.0523345	659	9.9476655	26
35	9.6656168	2419	10.3343832	9.7180173	3079	10.2819827	10.0524005	660	9.9475995	25
36	9.6658586	2418	10.3341414	9.7183251	3078	10.2816749	10.0524665	660	9.9475335	24
		2415			3076			661		
37	9.6661001		10.3338999	9.7186327		10.2813673	10.0525326		9.9474674	23
38	9.6663415	2414	10.3336585	9.7189402	3075	10.2810598	10.0525987	661	9.9474013	22
39	9.6665828	2413	10.3334172	9.7192476	3074	10.2807524	10.0526648	661	9.9473352	21
40	9.6668238	2410	10.3331762	9.7195549	3073	10.2804451	10.0527311	663	9.9472689	20
41	9.6670647	2409	10.3329353	9.7198620	3071	10.2801380	10.0527973	662	9.9472027	19
42	9.6673054	2407	10.3326946	9.7201690	3070	10.2798310	10.0528636	663	9.9471364	18
		2405			3069			664		
43	9.6675459		10.3324541	9.7204759		10.2795241	10.0529300		9.9470700	17
44	9.6677863	2404	10.3322137	9.7207827	3068	10.2792173	10.0529964	664	9.9470036	16
45	9.6680265	2402	10.3319735	9.7210893	3066	10.2789107	10.0530628	664	9.9469372	15
46	9.6682665	2400	10.3317335	9.7213958	3065	10.2786042	10.0531293	665	9.9468707	14
47	9.6685064	2399	10.3314936	9.7217022	3064	10.2782978	10.0531958	665	9.9468042	13
48	9.6687461	2397	10.3312539	9.7220085	3063	10.2779915	10.0532624	666	9.9467376	12
		2395			3062			666		
49	9.6689856		10.3310144	9.7223147		10.2776853	10.0533290		9.9466710	11
50	9.6692250	2394	10.3307750	9.7226207	3060	10.2773793	10.0533957	667	9.9466043	10
51	9.6694642	2392	10.3305358	9.7229266	3059	10.2770734	10.0534624	667	9.9465376	9
52	9.6697032	2390	10.3302968	9.7232324	3058	10.2767676	10.0535292	668	9.9464708	8
53	9.6699420	2388	10.3300580	9.7235381	3057	10.2764619	10.0535960	668	9.9464040	7
54	9.6701807	2387	10.3298193	9.7238436	3055	10.2761564	10.0536629	669	9.9463371	6
		2385			3054			669		
55	9.6704192		10.3295808	9.7241490		10.2758510	10.0537298		9.9462702	5
56	9.6706576	2384	10.3293424	9.7244543	3053	10.2755457	10.0537968	670	9.9462032	4
57	9.6708958	2382	10.3291042	9.7247595	3052	10.2752405	10.0538638	670	9.9461362	3
58	9.6711338	2380	10.3288662	9.7250646	3051	10.2749354	10.0539308	670	9.9460692	2
59	9.6713716	2378	10.3286284	9.7253695	3049	10.2746305	10.0539979	671	9.9460021	1
60	9.6716093	2377	10.3283907	9.7256744	3049	10.2743256	10.0540651	672	9.9459349	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

117° 62°

28°										151°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6716093	2375	10.3283907	9.7256744	3047	10.2743256	10.0540651	672	9.9459349	60
1	9.6718468	2373	10.3281532	9.7259791	3046	10.2740209	10.0541323	672	9.9458677	59
2	9.6720841	2372	10.3279159	9.7262837	3044	10.2737163	10.0541995	673	9.9458005	58
3	9.6723213	2370	10.3276787	9.7265881	3044	10.2734119	10.0542668	673	9.9457332	57
4	9.6725583	2369	10.3274417	9.7268925	3042	10.2731075	10.0543341	674	9.9456659	56
5	9.6727952	2367	10.3272048	9.7271967	3041	10.2728033	10.0544015	675	9.9455985	55
6	9.6730319	2365	10.3269681	9.7275008	3040	10.2724992	10.0544690	674	9.9455310	54
7	9.6732684	2363	10.3267316	9.7278048	3039	10.2721952	10.0545364	676	9.9454636	53
8	9.6735047	2362	10.3264953	9.7281087	3037	10.2718913	10.0546040	675	9.9453960	52
9	9.6737409	2360	10.3262591	9.7284124	3037	10.2715876	10.0546715	676	9.9453285	51
10	9.6739769	2359	10.3260231	9.7287161	3035	10.2712839	10.0547391	677	9.9452609	50
11	9.6742128	2357	10.3257872	9.7290196	3034	10.2709804	10.0548068	677	9.9451932	49
12	9.6744485	2355	10.3255515	9.7293230	3033	10.2706770	10.0548745	678	9.9451255	48
13	9.6746840	2354	10.3253160	9.7296263	3032	10.2703737	10.0549423	678	9.9450577	47
14	9.6749194	2352	10.3250806	9.7299295	3030	10.2700705	10.0550101	679	9.9449899	46
15	9.6751546	2350	10.3248454	9.7302325	3030	10.2697675	10.0550780	679	9.9449220	45
16	9.6753896	2349	10.3246104	9.7305354	3029	10.2694646	10.0551459	679	9.9448541	44
17	9.6756245	2347	10.3243755	9.7308383	3029	10.2691617	10.0552138	680	9.9447862	43
18	9.6758592	2345	10.3241408	9.7311410	3027	10.2688590	10.0552818	681	9.9447182	42
19	9.6760937	2344	10.3239063	9.7314436	3026	10.2685564	10.0553499	680	9.9446501	41
20	9.6763281	2342	10.3236719	9.7317460	3024	10.2682540	10.0554179	682	9.9445821	40
21	9.6765623	2340	10.3234377	9.7320484	3024	10.2679516	10.0554861	682	9.9445139	39
22	9.6767963	2339	10.3232037	9.7323506	3022	10.2676494	10.0555543	682	9.9444457	38
23	9.6770302	2338	10.3229698	9.7326527	3021	10.2673473	10.0556225	683	9.9443775	37
24	9.6772640	2335	10.3227360	9.7329547	3020	10.2670453	10.0556908	683	9.9443092	36
25	9.6774975	2334	10.3225025	9.7332566	3019	10.2667434	10.0557591	684	9.9442409	35
26	9.6777309	2333	10.3222691	9.7335584	3018	10.2664416	10.0558275	684	9.9441725	34
27	9.6779642	2330	10.3220358	9.7338601	3017	10.2661399	10.0558959	685	9.9441041	33
28	9.6781972	2329	10.3218028	9.7341616	3015	10.2658384	10.0559644	685	9.9440356	32
29	9.6784301	2328	10.3215699	9.7344631	3015	10.2655369	10.0560329	686	9.9439671	31
30	9.6786629	2326	10.3213371	9.7347644	3013	10.2652356	10.0561015	686	9.9438985	30
31	9.6788955	2324	10.3211045	9.7350656	3012	10.2649344	10.0561701	687	9.9438299	29
32	9.6791279	2323	10.3208721	9.7353667	3011	10.2646333	10.0562388	687	9.9437612	28
33	9.6793602	2321	10.3206398	9.7356677	3010	10.2643323	10.0563075	687	9.9436925	27
34	9.6795923	2320	10.3204077	9.7359685	3008	10.2640315	10.0563762	689	9.9436238	26
35	9.6798243	2317	10.3201757	9.7362693	3008	10.2637307	10.0564451	688	9.9435549	25
36	9.6800560	2317	10.3199440	9.7365699	3006	10.2634301	10.0565139	689	9.9434861	24
37	9.6802877	2314	10.3197123	9.7368705	3006	10.2631295	10.0565828	690	9.9434172	23
38	9.6805191	2313	10.3194809	9.7371709	3004	10.2628291	10.0566518	690	9.9433482	22
39	9.6807504	2312	10.3192496	9.7374712	3003	10.2625288	10.0567208	690	9.9432792	21
40	9.6809816	2310	10.3190184	9.7377714	3002	10.2622286	10.0567898	691	9.9432102	20
41	9.6812126	2308	10.3187874	9.7380715	3001	10.2619285	10.0568589	691	9.9431411	19
42	9.6814434	2307	10.3185566	9.7383714	2999	10.2616286	10.0569280	692	9.9430720	18
43	9.6816741	2305	10.3183259	9.7386713	2999	10.2613287	10.0569972	693	9.9430028	17
44	9.6819046	2303	10.3180954	9.7389710	2997	10.2610290	10.0570665	692	9.9429335	16
45	9.6821349	2302	10.3178651	9.7392707	2997	10.2607293	10.0571357	694	9.9428643	15
46	9.6823651	2301	10.3176349	9.7395702	2995	10.2604298	10.0572051	694	9.9427949	14
47	9.6825952	2298	10.3174048	9.7398696	2994	10.2601304	10.0572745	694	9.9427255	13
48	9.6828250	2298	10.3171750	9.7401689	2993	10.2598311	10.0573439	695	9.9426561	12
49	9.6830548	2295	10.3169452	9.7404681	2992	10.2595319	10.0574134	695	9.9425866	11
50	9.6832843	2294	10.3167157	9.7407672	2991	10.2592328	10.0574829	695	9.9425171	10
51	9.6835137	2293	10.3164863	9.7410662	2990	10.2589338	10.0575524	697	9.9424476	9
52	9.6837430	2290	10.3162570	9.7413650	2988	10.2586350	10.0576221	696	9.9423779	8
53	9.6839720	2290	10.3160280	9.7416638	2988	10.2583362	10.0576917	697	9.9423083	7
54	9.6842010	2287	10.3157990	9.7419624	2986	10.2580376	10.0577614	698	9.9422386	6
55	9.6844297	2286	10.3155703	9.7422609	2985	10.2577391	10.0578312	698	9.9421688	5
56	9.6846583	2285	10.3153417	9.7425594	2985	10.2574406	10.0579010	699	9.9420990	4
57	9.6848868	2283	10.3151132	9.7428577	2983	10.2571423	10.0579709	699	9.9420291	3
58	9.6851151	2281	10.3148849	9.7431559	2982	10.2568441	10.0580408	699	9.9419592	2
59	9.6853432	2280	10.3146568	9.7434540	2981	10.2565460	10.0581107	700	9.9418893	1
60	9.6855712		10.3144288	9.7437520	2980	10.2562480	10.0581807		9.9418193	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
118°										61°

29° 150°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6855712	2279	10.3144288	9.7437520	2979	10.2562480	10.0581807	701	9.9418193	60
1	9.6857991	2276	10.3142009	9.7440499	2977	10.2559501	10.0582608	701	9.9417492	59
2	9.6860267	2275	10.3139733	9.7443476	2977	10.2556524	10.0583209	701	9.9416791	58
3	9.6862542	2274	10.3137458	9.7446453	2975	10.2553547	10.0583910	702	9.9416090	57
4	9.6864816	2272	10.3135184	9.7449428	2975	10.2550572	10.0584612	703	9.9415388	56
5	9.6867088	2271	10.3132912	9.7452403	2973	10.2547597	10.0585315	703	9.9414685	55
6	9.6869359	2269	10.3130641	9.7455376	2973	10.2544624	10.0586018	703	9.9413982	54
7	9.6871628	2267	10.3128372	9.7458349	2971	10.2541651	10.0586721	704	9.9413279	53
8	9.6873895	2266	10.3126105	9.7461320	2970	10.2538680	10.0587425	704	9.9412575	52
9	9.6876161	2264	10.3123839	9.7464290	2969	10.2535710	10.0588129	705	9.9411871	51
10	9.6878425	2263	10.3121575	9.7467259	2968	10.2532741	10.0588834	705	9.9411166	50
11	9.6880688	2261	10.3119312	9.7470227	2967	10.2529773	10.0589539	706	9.9410461	49
12	9.6882949	2260	10.3117051	9.7473194	2966	10.2526806	10.0590245	707	9.9409755	48
13	9.6885209	2258	10.3114791	9.7476160	2965	10.2523840	10.0590952	706	9.9409048	47
14	9.6887467	2256	10.3112533	9.7479125	2964	10.2520875	10.0591658	708	9.9408342	46
15	9.6889723	2255	10.3110277	9.7482089	2963	10.2517911	10.0592366	707	9.9407634	45
16	9.6891978	2254	10.3108022	9.7485052	2961	10.2514948	10.0593073	708	9.9406927	44
17	9.6894232	2252	10.3105768	9.7488013	2961	10.2511987	10.0593781	709	9.9406219	43
18	9.6896484	2250	10.3103516	9.7490974	2960	10.2509026	10.0594490	709	9.9405510	42
19	9.6898734	2249	10.3101266	9.7493934	2958	10.2506066	10.0595199	710	9.9404801	41
20	9.6900983	2248	10.3099017	9.7496892	2958	10.2503108	10.0595909	710	9.9404091	40
21	9.6903231	2245	10.3096769	9.7499850	2956	10.2500150	10.0596619	711	9.9403381	39
22	9.6905476	2245	10.3094524	9.7502806	2956	10.2497194	10.0597330	711	9.9402670	38
23	9.6907721	2243	10.3092279	9.7505762	2954	10.2494238	10.0598041	711	9.9401959	37
24	9.6909964	2241	10.3090036	9.7508716	2953	10.2491284	10.0598752	713	9.9401248	36
25	9.6912205	2240	10.3087795	9.7511669	2953	10.2488331	10.0599465	712	9.9400535	35
26	9.6914445	2238	10.3085555	9.7514622	2951	10.2485378	10.0600177	713	9.9399823	34
27	9.6916683	2236	10.3083317	9.7517573	2950	10.2482427	10.0600890	714	9.9399110	33
28	9.6918919	2236	10.3081081	9.7520523	2949	10.2479477	10.0601604	714	9.9398396	32
29	9.6921155	2233	10.3078845	9.7523472	2948	10.2476528	10.0602318	714	9.9397682	31
30	9.6923388	2232	10.3076612	9.7526420	2948	10.2473580	10.0603032	715	9.9396968	30
31	9.6925620	2231	10.3074380	9.7529368	2946	10.2470632	10.0603747	716	9.9396253	29
32	9.6927851	2229	10.3072149	9.7532314	2945	10.2467686	10.0604463	716	9.9395537	28
33	9.6930080	2228	10.3069920	9.7535259	2944	10.2464741	10.0605179	716	9.9394821	27
34	9.6932308	2226	10.3067692	9.7538203	2943	10.2461797	10.0605895	717	9.9394105	26
35	9.6934534	2224	10.3065466	9.7541146	2942	10.2458854	10.0606612	717	9.9393388	25
36	9.6936758	2223	10.3063242	9.7544088	2941	10.2455912	10.0607329	718	9.9392671	24
37	9.6938981	2222	10.3061019	9.7547029	2940	10.2452971	10.0608047	719	9.9391953	23
38	9.6941203	2220	10.3058797	9.7549969	2939	10.2450031	10.0608766	719	9.9391234	22
39	9.6943423	2219	10.3056577	9.7552908	2938	10.2447092	10.0609485	719	9.9390515	21
40	9.6945642	2217	10.3054358	9.7555846	2937	10.2444154	10.0610204	720	9.9389796	20
41	9.6947859	2215	10.3052141	9.7558783	2935	10.2441217	10.0610924	720	9.9389076	19
42	9.6950074	2214	10.3049926	9.7561718	2935	10.2438282	10.0611644	721	9.9388356	18
43	9.6952288	2213	10.3047712	9.7564653	2934	10.2435347	10.0612365	721	9.9387635	17
44	9.6954501	2211	10.3045499	9.7567587	2933	10.2432413	10.0613086	722	9.9386914	16
45	9.6956712	2210	10.3043288	9.7570520	2932	10.2429480	10.0613808	722	9.9386192	15
46	9.6958922	2208	10.3041078	9.7573452	2931	10.2426548	10.0614530	723	9.9385470	14
47	9.6961130	2206	10.3038870	9.7576383	2930	10.2423617	10.0615253	723	9.9384747	13
48	9.6963336	2205	10.3036664	9.7579313	2929	10.2420687	10.0615976	724	9.9384024	12
49	9.6965541	2204	10.3034459	9.7582242	2928	10.2417758	10.0616700	724	9.9383300	11
50	9.6967745	2202	10.3032255	9.7585170	2926	10.2414830	10.0617424	725	9.9382576	10
51	9.6969947	2201	10.3030053	9.7588096	2926	10.2411904	10.0618149	725	9.9381851	9
52	9.6972148	2199	10.3027852	9.7591022	2925	10.2408978	10.0618874	726	9.9381126	8
53	9.6974347	2198	10.3025653	9.7593947	2924	10.2406053	10.0619600	726	9.9380400	7
54	9.6976545	2196	10.3023455	9.7596871	2923	10.2403129	10.0620326	727	9.9379674	6
55	9.6978741	2195	10.3021259	9.7599794	2922	10.2400206	10.0621053	727	9.9378947	5
56	9.6980936	2193	10.3019064	9.7602716	2921	10.2397284	10.0621780	728	9.9378220	4
57	9.6983129	2192	10.3016871	9.7605637	2920	10.2394363	10.0622508	728	9.9377492	3
58	9.6985321	2190	10.3014679	9.7608557	2919	10.2391443	10.0623236	729	9.9376764	2
59	9.6987511	2189	10.3012489	9.7611476	2918	10.2388524	10.0623965	729	9.9376035	1
60	9.6989700		10.3010300	9.7614394		10.2385606	10.0624694		9.9375306	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

119° 60°

30° 149°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.6989700	2187	10.3010300	9.7614394	2917	10.2385606	10.0624694	729	9.9375306	60
1	9.6991887	2186	10.3008113	9.7617311	2916	10.2382689	10.0625423	730	9.9374577	59
2	9.6994073	2185	10.3005927	9.7620227	2915	10.2379773	10.0626153	731	9.9373847	58
3	9.6996258	2183	10.3003742	9.7623142	2914	10.2376858	10.0626884	731	9.9373116	57
4	9.6998441	2181	10.3001559	9.7626056	2913	10.2373944	10.0627615	732	9.9372385	56
5	9.7000622	2180	10.2999378	9.7628969	2912	10.2371031	10.0628347	732	9.9371653	55
6	9.7002802	2179	10.2997198	9.7631881	2911	10.2368119	10.0629079	732	9.9370921	54
7	9.7004981	2177	10.2995019	9.7634792	2910	10.2365208	10.0629811	733	9.9370189	53
8	9.7007158	2176	10.2992842	9.7637702	2910	10.2362298	10.0630544	734	9.9369456	52
9	9.7009334	2174	10.2990666	9.7640612	2908	10.2359388	10.0631278	734	9.9368722	51
10	9.7011508	2173	10.2988492	9.7643520	2907	10.2356480	10.0632012	734	9.9367988	50
11	9.7013681	2171	10.2986319	9.7646427	2907	10.2353573	10.0632746	735	9.9367254	49
12	9.7015852	2170	10.2984148	9.7649334	2905	10.2350666	10.0633481	736	9.9366519	48
13	9.7018022	2168	10.2981978	9.7652239	2904	10.2347761	10.0634217	736	9.9365783	47
14	9.7020190	2167	10.2979810	9.7655143	2904	10.2344857	10.0634953	736	9.9365047	46
15	9.7022357	2166	10.2977643	9.7658047	2902	10.2341953	10.0635689	737	9.9364311	45
16	9.7024523	2164	10.2975477	9.7660949	2902	10.2339051	10.0636426	738	9.9363574	44
17	9.7026687	2162	10.2973313	9.7663851	2900	10.2336149	10.0637164	738	9.9362836	43
18	9.7028849	2162	10.2971151	9.7666751	2900	10.2333249	10.0637902	738	9.9362098	42
19	9.7031011	2159	10.2968989	9.7669651	2899	10.2330349	10.0638640	739	9.9361360	41
20	9.7033170	2159	10.2966830	9.7672550	2898	10.2327450	10.0639379	740	9.9360621	40
21	9.7035329	2157	10.2964671	9.7675448	2896	10.2324552	10.0640119	740	9.9359881	39
22	9.7037486	2155	10.2962514	9.7678344	2896	10.2321656	10.0640859	740	9.9359141	38
23	9.7039641	2154	10.2960359	9.7681240	2895	10.2318760	10.0641599	741	9.9358401	37
24	9.7041795	2152	10.2958205	9.7684135	2894	10.2315865	10.0642340	742	9.9357660	36
25	9.7043947	2152	10.2956053	9.7687029	2893	10.2312971	10.0643082	741	9.9356918	35
26	9.7046099	2149	10.2953901	9.7689922	2892	10.2310078	10.0643823	743	9.9356177	34
27	9.7048248	2149	10.2951752	9.7692814	2891	10.2307186	10.0644566	743	9.9355434	33
28	9.7050397	2146	10.2949603	9.7695705	2891	10.2304295	10.0645309	743	9.9354691	32
29	9.7052543	2146	10.2947457	9.7698596	2889	10.2301404	10.0646052	744	9.9353948	31
30	9.7054689	2144	10.2945311	9.7701485	2888	10.2298515	10.0646796	745	9.9353204	30
31	9.7056833	2142	10.2943167	9.7704373	2888	10.2295627	10.0647541	744	9.9352459	29
32	9.7058975	2141	10.2941025	9.7707261	2886	10.2292739	10.0648285	746	9.9351715	28
33	9.7061116	2140	10.2938884	9.7710147	2886	10.2289853	10.0649031	746	9.9350969	27
34	9.7063256	2138	10.2936744	9.7713033	2884	10.2286967	10.0649777	746	9.9350223	26
35	9.7065394	2137	10.2934606	9.7715917	2884	10.2284083	10.0650523	747	9.9349477	25
36	9.7067531	2136	10.2932469	9.7718801	2883	10.2281199	10.0651270	747	9.9348730	24
37	9.7069667	2134	10.2930333	9.7721684	2882	10.2278316	10.0652017	748	9.9347983	23
38	9.7071801	2132	10.2928199	9.7724566	2881	10.2275434	10.0652765	749	9.9347235	22
39	9.7073933	2131	10.2926067	9.7727447	2880	10.2272553	10.0653514	748	9.9346486	21
40	9.7076064	2130	10.2923936	9.7730327	2879	10.2269673	10.0654262	750	9.9345738	20
41	9.7078194	2129	10.2921806	9.7733206	2878	10.2266794	10.0655012	750	9.9344988	19
42	9.7080323	2127	10.2919677	9.7736084	2877	10.2263916	10.0655762	750	9.9344238	18
43	9.7082450	2125	10.2917550	9.7738961	2877	10.2261039	10.0656512	751	9.9343488	17
44	9.7084575	2124	10.2915425	9.7741838	2875	10.2258162	10.0657263	751	9.9342737	16
45	9.7086699	2123	10.2913301	9.7744713	2875	10.2255287	10.0658014	752	9.9341986	15
46	9.7088822	2121	10.2911178	9.7747588	2874	10.2252412	10.0658766	752	9.9341234	14
47	9.7090943	2120	10.2909057	9.7750462	2872	10.2249538	10.0659518	753	9.9340482	13
48	9.7093063	2119	10.2906937	9.7753334	2872	10.2246666	10.0660271	753	9.9339729	12
49	9.7095182	2117	10.2904818	9.7756206	2871	10.2243794	10.0661024	754	9.9338976	11
50	9.7097299	2116	10.2902701	9.7759077	2870	10.2240923	10.0661778	755	9.9338222	10
51	9.7099415	2114	10.2900585	9.7761947	2869	10.2238053	10.0662533	754	9.9337467	9
52	9.7101529	2113	10.2898471	9.7764816	2869	10.2235184	10.0663287	756	9.9336713	8
53	9.7103642	2111	10.2896358	9.7767685	2867	10.2232315	10.0664043	756	9.9335957	7
54	9.7105753	2110	10.2894247	9.7770552	2866	10.2229448	10.0664799	756	9.9335201	6
55	9.7107863	2109	10.2892137	9.7773418	2866	10.2226582	10.0665555	757	9.9334445	5
56	9.7109972	2108	10.2890028	9.7776284	2865	10.2223716	10.0666312	757	9.9333688	4
57	9.7112080	2106	10.2887920	9.7779149	2863	10.2220851	10.0667069	758	9.9332931	3
58	9.7114186	2104	10.2885814	9.7782012	2863	10.2217988	10.0667827	758	9.9332173	2
59	9.7116290	2103	10.2883710	9.7784875	2862	10.2215125	10.0668585	759	9.9331415	1
60	9.7118393		10.2881607	9.7787737		10.2212263	10.0669344		9.9330656	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

120° 59°

31° 148°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7118393		10.2881607	9.7787737		10.2212263	10.0669344		9.9330656	60
1	9.7120495	2102	10.2879505	9.7790599	2862	10.2209401	10.0670103	759	9.9329897	59
2	9.7122596	2101	10.2877404	9.7793459	2860	10.2206541	10.0670863	760	9.9329137	58
3	9.7124695	2099	10.2875305	9.7796318	2859	10.2203682	10.0671624	761	9.9328376	57
4	9.7126792	2097	10.2873208	9.7799177	2859	10.2200823	10.0672384	760	9.9327616	56
5	9.7128889	2097	10.2871111	9.7802034	2857	10.2197966	10.0673146	762	9.9326854	55
6	9.7130983	2094	10.2869017	9.7804891	2857	10.2195109	10.0673908	762	9.9326092	54
7	9.7133077	2094	10.2866923	9.7807747	2856	10.2192253	10.0674670	762	9.9325330	53
8	9.7135169	2092	10.2864831	9.7810602	2855	10.2189398	10.0675433	763	9.9324567	52
9	9.7137260	2091	10.2862740	9.7813456	2854	10.2186544	10.0676196	763	9.9323804	51
10	9.7139349	2089	10.2860651	9.7816309	2853	10.2183691	10.0676960	764	9.9323040	50
11	9.7141437	2088	10.2858563	9.7819162	2853	10.2180838	10.0677724	764	9.9322276	49
12	9.7143524	2087	10.2856476	9.7822013	2851	10.2177987	10.0678489	765	9.9321511	48
13	9.7145609	2085	10.2854391	9.7824864	2851	10.2175136	10.0679254	765	9.9320746	47
14	9.7147693	2084	10.2852307	9.7827713	2849	10.2172287	10.0680020	766	9.9319980	46
15	9.7149776	2083	10.2850224	9.7830562	2849	10.2169438	10.0680787	767	9.9319213	45
16	9.7151857	2081	10.2848143	9.7833410	2848	10.2166590	10.0681553	766	9.9318447	44
17	9.7153937	2080	10.2846063	9.7836258	2848	10.2163742	10.0682321	768	9.9317679	43
18	9.7156015	2078	10.2843985	9.7839104	2846	10.2160896	10.0683089	768	9.9316911	42
19	9.7158092	2077	10.2841908	9.7841949	2845	10.2158051	10.0683857	768	9.9316143	41
20	9.7160168	2076	10.2839832	9.7844794	2845	10.2155206	10.0684626	769	9.9315374	40
21	9.7162243	2075	10.2837757	9.7847638	2844	10.2152362	10.0685395	769	9.9314605	39
22	9.7164316	2073	10.2835684	9.7850481	2843	10.2149519	10.0686165	770	9.9313835	38
23	9.7166387	2071	10.2833613	9.7853323	2842	10.2146677	10.0686935	770	9.9313065	37
24	9.7168458	2071	10.2831542	9.7856164	2841	10.2143836	10.0687706	771	9.9312294	36
25	9.7170526	2068	10.2829474	9.7859004	2840	10.2140996	10.0688478	772	9.9311522	35
26	9.7172594	2068	10.2827406	9.7861844	2840	10.2138156	10.0689250	772	9.9310750	34
27	9.7174660	2066	10.2825340	9.7864682	2838	10.2135318	10.0690022	772	9.9309978	33
28	9.7176725	2065	10.2823275	9.7867520	2838	10.2132480	10.0690795	773	9.9309205	32
29	9.7178789	2064	10.2821211	9.7870357	2837	10.2129643	10.0691568	773	9.9308432	31
30	9.7180851	2062	10.2819149	9.7873193	2836	10.2126807	10.0692342	774	9.9307658	30
31	9.7182912	2061	10.2817088	9.7876028	2835	10.2123972	10.0693117	775	9.9306883	29
32	9.7184971	2059	10.2815029	9.7878863	2835	10.2121137	10.0693891	774	9.9306109	28
33	9.7187030	2059	10.2812970	9.7881696	2833	10.2118304	10.0694667	776	9.9305333	27
34	9.7189086	2056	10.2810914	9.7884529	2833	10.2115471	10.0695443	776	9.9304557	26
35	9.7191142	2056	10.2808858	9.7887361	2832	10.2112639	10.0696219	776	9.9303781	25
36	9.7193196	2054	10.2806804	9.7890192	2831	10.2109808	10.0696996	777	9.9303004	24
37	9.7195249	2053	10.2804751	9.7893023	2831	10.2106977	10.0697774	778	9.9302226	23
38	9.7197300	2051	10.2802700	9.7895852	2829	10.2104148	10.0698552	778	9.9301448	22
39	9.7199350	2050	10.2800650	9.7898681	2829	10.2101319	10.0699330	778	9.9300670	21
40	9.7201399	2049	10.2798601	9.7901508	2827	10.2098492	10.0700109	779	9.9299891	20
41	9.7203447	2048	10.2796553	9.7904335	2827	10.2095665	10.0700888	779	9.9299112	19
42	9.7205493	2046	10.2794507	9.7907161	2826	10.2092839	10.0701668	780	9.9298332	18
43	9.7207538	2045	10.2792462	9.7909987	2826	10.2090013	10.0702449	781	9.9297551	17
44	9.7209581	2043	10.2790419	9.7912811	2824	10.2087189	10.0703230	781	9.9296770	16
45	9.7211623	2042	10.2788377	9.7915635	2824	10.2084365	10.0704011	781	9.9295989	15
46	9.7213664	2041	10.2786336	9.7918458	2823	10.2081542	10.0704793	782	9.9295207	14
47	9.7215704	2040	10.2784296	9.7921280	2822	10.2078720	10.0705576	783	9.9294424	13
48	9.7217742	2038	10.2782258	9.7924101	2821	10.2075899	10.0706359	783	9.9293641	12
49	9.7219779	2037	10.2780221	9.7926921	2820	10.2073079	10.0707143	784	9.9292857	11
50	9.7221814	2035	10.2778186	9.7929741	2820	10.2070259	10.0707927	784	9.9292073	10
51	9.7223848	2034	10.2776152	9.7932560	2819	10.2067440	10.0708711	784	9.9291289	9
52	9.7225881	2033	10.2774119	9.7935378	2818	10.2064622	10.0709496	785	9.9290504	8
53	9.7227913	2032	10.2772087	9.7938195	2817	10.2061805	10.0710282	786	9.9289718	7
54	9.7229943	2030	10.2770057	9.7941011	2816	10.2058989	10.0711068	786	9.9288932	6
55	9.7231972	2029	10.2768028	9.7943827	2816	10.2056173	10.0711855	787	9.9288145	5
56	9.7234000	2028	10.2766000	9.7946641	2814	10.2053359	10.0712642	787	9.9287358	4
57	9.7236026	2026	10.2763974	9.7949455	2814	10.2050545	10.0713429	787	9.9286571	3
58	9.7238051	2025	10.2761949	9.7952268	2813	10.2047732	10.0714217	788	9.9285783	2
59	9.7240075	2024	10.2759925	9.7955081	2813	10.2044919	10.0715006	789	9.9284994	1
60	9.7242097	2022	10.2757903	9.7957892	2811	10.2042108	10.0715795	789	9.9284205	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

121° 58°

32° 147°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7242097		10.2757903	9.7957892		10.2042108	10.0715795		9.9284205	60
1	9.7244118	2021	10.2755882	9.7960703	2811	10.2039297	10.0716585	790	9.9283415	59
2	9.7246138	2020	10.2753862	9.7963513	2810	10.2036487	10.0717375	790	9.9282625	58
3	9.7248156	2018	10.2751844	9.7966322	2809	10.2033678	10.0718166	791	9.9281834	57
4	9.7250174	2018	10.2749826	9.7969130	2808	10.2030870	10.0718957	791	9.9281043	56
5	9.7252189	2015	10.2747811	9.7971938	2808	10.2028062	10.0719749	792	9.9280251	55
6	9.7254204	2015	10.2745796	9.7974745	2807	10.2025255	10.0720541	792	9.9279459	54
7	9.7256217	2013	10.2743783	9.7977551	2806	10.2022449	10.0721334	793	9.9278666	53
8	9.7258229	2012	10.2741771	9.7980356	2805	10.2019644	10.0722127	793	9.9277873	52
9	9.7260240	2011	10.2739760	9.7983160	2804	10.2016840	10.0722921	794	9.9277079	51
10	9.7262249	2009	10.2737751	9.7985964	2804	10.2014036	10.0723715	794	9.9276285	50
11	9.7264257	2008	10.2735743	9.7988767	2803	10.2011233	10.0724510	795	9.9275490	49
12	9.7266264	2007	10.2733736	9.7991569	2802	10.2008431	10.0725305	795	9.9274695	48
13	9.7268269	2005	10.2731731	9.7994370	2801	10.2005630	10.0726101	796	9.9273899	47
14	9.7270273	2004	10.2729727	9.7997170	2800	10.2002830	10.0726897	796	9.9273103	46
15	9.7272276	2003	10.2727724	9.7999970	2800	10.2000030	10.0727694	797	9.9272306	45
16	9.7274278	2002	10.2725722	9.8002769	2799	10.1997231	10.0728491	797	9.9271509	44
17	9.7276278	2000	10.2723722	9.8005567	2798	10.1994433	10.0729289	798	9.9270711	43
18	9.7278277	1999	10.2721723	9.8008365	2798	10.1991635	10.0730087	798	9.9269913	42
19	9.7280275	1998	10.2719725	9.8011161	2796	10.1988839	10.0730886	799	9.9269114	41
20	9.7282271	1996	10.2717729	9.8013957	2796	10.1986043	10.0731686	800	9.9268314	40
21	9.7284267	1996	10.2715733	9.8016752	2795	10.1983248	10.0732486	800	9.9267514	39
22	9.7286260	1993	10.2713740	9.8019546	2794	10.1980454	10.0733286	800	9.9266714	38
23	9.7288253	1993	10.2711747	9.8022340	2794	10.1977660	10.0734087	801	9.9265913	37
24	9.7290244	1991	10.2709756	9.8025133	2793	10.1974867	10.0734888	801	9.9265112	36
25	9.7292234	1990	10.2707766	9.8027925	2792	10.1972075	10.0735690	802	9.9264310	35
26	9.7294223	1989	10.2705777	9.8030716	2791	10.1969284	10.0736493	803	9.9263507	34
27	9.7296211	1988	10.2703789	9.8033506	2790	10.1966494	10.0737296	803	9.9262704	33
28	9.7298197	1986	10.2701803	9.8036296	2790	10.1963704	10.0738099	803	9.9261901	32
29	9.7300182	1985	10.2699818	9.8039085	2789	10.1960915	10.0738904	805	9.9261096	31
30	9.7302165	1983	10.2697835	9.8041873	2788	10.1958127	10.0739708	804	9.9260292	30
31	9.7304148	1983	10.2695852	9.8044661	2788	10.1955339	10.0740513	805	9.9259487	29
32	9.7306129	1981	10.2693871	9.8047447	2786	10.1952553	10.0741319	806	9.9258681	28
33	9.7308109	1980	10.2691891	9.8050233	2786	10.1949767	10.0742125	806	9.9257875	27
34	9.7310087	1978	10.2689913	9.8053019	2786	10.1946981	10.0742931	806	9.9257069	26
35	9.7312064	1977	10.2687936	9.8055803	2784	10.1944197	10.0743739	808	9.9256261	25
36	9.7314040	1976	10.2685960	9.8058587	2784	10.1941413	10.0744546	807	9.9255454	24
37	9.7316015	1975	10.2683985	9.8061370	2783	10.1938630	10.0745354	808	9.9254646	23
38	9.7317989	1974	10.2682011	9.8064152	2782	10.1935848	10.0746163	809	9.9253837	22
39	9.7319961	1972	10.2680039	9.8066933	2781	10.1933067	10.0746972	809	9.9253028	21
40	9.7321932	1971	10.2678068	9.8069714	2781	10.1930286	10.0747782	810	9.9252218	20
41	9.7323902	1970	10.2676098	9.8072494	2780	10.1927506	10.0748592	810	9.9251408	19
42	9.7325870	1968	10.2674130	9.8075273	2779	10.1924727	10.0749403	811	9.9250597	18
43	9.7327837	1967	10.2672163	9.8078052	2779	10.1921948	10.0750214	811	9.9249786	17
44	9.7329803	1966	10.2670197	9.8080829	2777	10.1919171	10.0751026	812	9.9248974	16
45	9.7331768	1965	10.2668232	9.8083606	2777	10.1916394	10.0751839	813	9.9248161	15
46	9.7333731	1963	10.2666269	9.8086383	2777	10.1913617	10.0752651	812	9.9247349	14
47	9.7335693	1962	10.2664307	9.8089158	2775	10.1910842	10.0753465	814	9.9246535	13
48	9.7337654	1961	10.2662346	9.8091933	2775	10.1908067	10.0754279	814	9.9245721	12
49	9.7339614	1960	10.2660386	9.8094707	2774	10.1905293	10.0755093	814	9.9244907	11
50	9.7341572	1958	10.2658428	9.8097480	2773	10.1902520	10.0755908	815	9.9244092	10
51	9.7343529	1957	10.2656471	9.8100253	2773	10.1899747	10.0756723	815	9.9243277	9
52	9.7345485	1956	10.2654515	9.8103025	2772	10.1896975	10.0757539	816	9.9242461	8
53	9.7347440	1955	10.2652560	9.8105796	2771	10.1894204	10.0758356	817	9.9241644	7
54	9.7349393	1953	10.2650607	9.8108566	2770	10.1891434	10.0759173	817	9.9240827	6
55	9.7351345	1952	10.2648655	9.8111336	2770	10.1888664	10.0759990	817	9.9240010	5
56	9.7353296	1951	10.2646704	9.8114105	2769	10.1885895	10.0760809	819	9.9239191	4
57	9.7355246	1950	10.2644754	9.8116873	2768	10.1883127	10.0761627	818	9.9238373	3
58	9.7357195	1949	10.2642805	9.8119641	2768	10.1880359	10.0762446	819	9.9237554	2
59	9.7359142	1947	10.2640858	9.8122408	2767	10.1877592	10.0763266	820	9.9236734	1
60	9.7361088	1946	10.2638912	9.8125174	2766	10.1874826	10.0764086	820	9.9235914	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

122° 57°

33° 146°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7361088		10.2638912	9.8125174		10.1874826	10.0764086		9.9235914	60
1	9.7363032	1944	10.2636968	9.8127939	2765	10.1872061	10.0764907	821	9.9235093	59
2	9.7364976	1944	10.2635024	9.8130704	2765	10.1869296	10.0765728	821	9.9234272	58
3	9.7366918	1942	10.2633082	9.8133468	2764	10.1866532	10.0766550	822	9.9233450	57
4	9.7368859	1941	10.2631141	9.8136231	2763	10.1863769	10.0767372	822	9.9232628	56
5	9.7370799	1940	10.2629201	9.8138993	2762	10.1861007	10.0768195	823	9.9231805	55
6	9.7372737	1938	10.2627263	9.8141755	2762	10.1858245	10.0769018	823	9.9230982	54
7	9.7374675	1938	10.2625325	9.8144516	2761	10.1855484	10.0769842	824	9.9230158	53
8	9.7376611	1936	10.2623389	9.8147277	2761	10.1852723	10.0770666	824	9.9229334	52
9	9.7378546	1935	10.2621454	9.8150036	2759	10.1849964	10.0771491	825	9.9228509	51
10	9.7380479	1933	10.2619521	9.8152795	2759	10.1847205	10.0772316	825	9.9227684	50
11	9.7382412	1933	10.2617588	9.8155554	2759	10.1844446	10.0773142	826	9.9226858	49
12	9.7384343	1931	10.2615657	9.8158311	2757	10.1841689	10.0773968	826	9.9226032	48
13	9.7386273	1930	10.2613727	9.8161068	2757	10.1838932	10.0774795	827	9.9225205	47
14	9.7388201	1928	10.2611799	9.8163824	2756	10.1836176	10.0775623	828	9.9224377	46
15	9.7390129	1928	10.2609871	9.8166580	2756	10.1833420	10.0776451	828	9.9223549	45
16	9.7392055	1926	10.2607945	9.8169335	2755	10.1830665	10.0777279	828	9.9222721	44
17	9.7393980	1925	10.2606020	9.8172089	2754	10.1827911	10.0778109	830	9.9221891	43
18	9.7395904	1924	10.2604096	9.8174842	2753	10.1825158	10.0778938	829	9.9221062	42
19	9.7397827	1923	10.2602173	9.8177595	2753	10.1822405	10.0779768	830	9.9220232	41
20	9.7399748	1921	10.2600252	9.8180347	2752	10.1819653	10.0780599	831	9.9219401	40
21	9.7401668	1920	10.2598332	9.8183098	2751	10.1816902	10.0781430	831	9.9218570	39
22	9.7403587	1919	10.2596413	9.8185849	2751	10.1814151	10.0782262	832	9.9217738	38
23	9.7405505	1918	10.2594495	9.8188599	2750	10.1811401	10.0783094	832	9.9216906	37
24	9.7407421	1916	10.2592579	9.8191348	2749	10.1808652	10.0783927	833	9.9216073	36
25	9.7409337	1916	10.2590663	9.8194096	2748	10.1805904	10.0784760	833	9.9215240	35
26	9.7411251	1914	10.2588749	9.8196844	2748	10.1803156	10.0785594	834	9.9214406	34
27	9.7413164	1913	10.2586836	9.8199592	2748	10.1800408	10.0786428	834	9.9213572	33
28	9.7415075	1911	10.2584925	9.8202338	2746	10.1797662	10.0787263	835	9.9212737	32
29	9.7416986	1911	10.2583014	9.8205084	2746	10.1794916	10.0788098	835	9.9211902	31
30	9.7418895	1909	10.2581105	9.8207829	2745	10.1792171	10.0788934	836	9.9211066	30
31	9.7420803	1908	10.2579197	9.8210574	2745	10.1789426	10.0789771	837	9.9210229	29
32	9.7422710	1907	10.2577290	9.8213317	2743	10.1786683	10.0790607	836	9.9209393	28
33	9.7424616	1906	10.2575384	9.8216060	2743	10.1783940	10.0791445	838	9.9208555	27
34	9.7426520	1904	10.2573480	9.8218803	2743	10.1781197	10.0792283	838	9.9207717	26
35	9.7428423	1903	10.2571577	9.8221545	2742	10.1778455	10.0793122	839	9.9206878	25
36	9.7430325	1902	10.2569675	9.8224286	2741	10.1775714	10.0793961	839	9.9206039	24
37	9.7432226	1901	10.2567774	9.8227026	2740	10.1772974	10.0794800	839	9.9205200	23
38	9.7434126	1900	10.2565874	9.8229766	2740	10.1770234	10.0795640	840	9.9204360	22
39	9.7436024	1898	10.2563976	9.8232505	2739	10.1767495	10.0796481	841	9.9203519	21
40	9.7437921	1897	10.2562079	9.8235244	2739	10.1764756	10.0797322	841	9.9202678	20
41	9.7439817	1896	10.2560183	9.8237981	2737	10.1762019	10.0798164	842	9.9201836	19
42	9.7441712	1895	10.2558288	9.8240719	2738	10.1759281	10.0799006	842	9.9200994	18
43	9.7443606	1894	10.2556394	9.8243455	2736	10.1756545	10.0799849	843	9.9200151	17
44	9.7445498	1892	10.2554502	9.8246191	2736	10.1753809	10.0800692	843	9.9199308	16
45	9.7447390	1892	10.2552610	9.8248926	2735	10.1751074	10.0801536	844	9.9198464	15
46	9.7449280	1890	10.2550720	9.8251660	2734	10.1748340	10.0802381	845	9.9197619	14
47	9.7451169	1889	10.2548831	9.8254394	2734	10.1745606	10.0803225	844	9.9196775	13
48	9.7453056	1887	10.2546944	9.8257127	2733	10.1742873	10.0804071	846	9.9195929	12
49	9.7454943	1887	10.2545057	9.8259860	2733	10.1740140	10.0804917	846	9.9195083	11
50	9.7456828	1885	10.2543172	9.8262592	2732	10.1737408	10.0805763	846	9.9194237	10
51	9.7458712	1884	10.2541288	9.8265323	2731	10.1734677	10.0806610	847	9.9193390	9
52	9.7460595	1883	10.2539405	9.8268053	2730	10.1731947	10.0807458	848	9.9192542	8
53	9.7462477	1882	10.2537523	9.8270783	2730	10.1729217	10.0808306	848	9.9191694	7
54	9.7464358	1881	10.2535642	9.8273513	2730	10.1726487	10.0809155	849	9.9190845	6
55	9.7466237	1879	10.2533763	9.8276241	2728	10.1723759	10.0810004	849	9.9189996	5
56	9.7468115	1878	10.2531885	9.8278969	2728	10.1721031	10.0810854	850	9.9189146	4
57	9.7469992	1877	10.2530008	9.8281696	2727	10.1718304	10.0811704	850	9.9188296	3
58	9.7471868	1876	10.2528132	9.8284423	2727	10.1715577	10.0812555	851	9.9187445	2
59	9.7473743	1875	10.2526257	9.8287149	2726	10.1712851	10.0813406	851	9.9186594	1
60	9.7475617	1874	10.2524383	9.8289874	2725	10.1710126	10.0814258	852	9.9185742	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

123° 56°

34° 145°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7475617	1872	10.2524383	9.8289874	2725	10.1710126	10.0814258	852	9.9185742	60
1	9.7477489	1871	10.2522511	9.8292599	2724	10.1707401	10.0815110	853	9.9184890	59
2	9.7479360	1870	10.2520640	9.8295323	2724	10.1704677	10.0815963	854	9.9184037	58
3	9.7481230	1869	10.2518770	9.8298047	2722	10.1701953	10.0816817	854	9.9183183	57
4	9.7483099	1868	10.2516901	9.8300769	2723	10.1699231	10.0817671	854	9.9182329	56
5	9.7484967	1866	10.2515033	9.8303492	2721	10.1696508	10.0818525	855	9.9181475	55
6	9.7486833	1865	10.2513167	9.8306213	2721	10.1693787	10.0819380	856	9.9180620	54
7	9.7488698	1864	10.2511302	9.8308934	2720	10.1691066	10.0820236	856	9.9179764	53
8	9.7490562	1863	10.2509438	9.8311654	2720	10.1688346	10.0821092	857	9.9178908	52
9	9.7492425	1862	10.2507575	9.8314374	2719	10.1685626	10.0821949	857	9.9178051	51
10	9.7494287	1861	10.2505713	9.8317093	2718	10.1682907	10.0822806	858	9.9177194	50
11	9.7496148	1859	10.2503852	9.8319811	2718	10.1680189	10.0823664	858	9.9176336	49
12	9.7498007	1859	10.2501993	9.8322529	2717	10.1677471	10.0824522	859	9.9175478	48
13	9.7499866	1857	10.2500134	9.8325246	2717	10.1674754	10.0825381	859	9.9174619	47
14	9.7501723	1856	10.2498277	9.8327963	2716	10.1672037	10.0826240	860	9.9173760	46
15	9.7503579	1855	10.2496421	9.8330679	2715	10.1669321	10.0827100	860	9.9172900	45
16	9.7505434	1853	10.2494566	9.8333394	2715	10.1666606	10.0827960	861	9.9172040	44
17	9.7507287	1853	10.2492713	9.8336109	2714	10.1663891	10.0828821	862	9.9171179	43
18	9.7509140	1851	10.2490860	9.8338823	2713	10.1661177	10.0829683	862	9.9170317	42
19	9.7510991	1851	10.2489009	9.8341536	2713	10.1658464	10.0830545	862	9.9169455	41
20	9.7512842	1849	10.2487158	9.8344249	2712	10.1655751	10.0831407	863	9.9168593	40
21	9.7514691	1847	10.2485309	9.8346961	2712	10.1653039	10.0832270	864	9.9167730	39
22	9.7516538	1847	10.2483462	9.8349673	2711	10.1650327	10.0833134	864	9.9166866	38
23	9.7518385	1846	10.2481615	9.8352384	2710	10.1647616	10.0833998	865	9.9166002	37
24	9.7520231	1844	10.2479769	9.8355094	2710	10.1644906	10.0834863	865	9.9165137	36
25	9.7522075	1844	10.2477925	9.8357804	2709	10.1642196	10.0835728	866	9.9164272	35
26	9.7523919	1842	10.2476081	9.8360513	2708	10.1639487	10.0836594	867	9.9163406	34
27	9.7525761	1841	10.2474239	9.8363221	2708	10.1636779	10.0837461	866	9.9162539	33
28	9.7527602	1840	10.2472398	9.8365929	2707	10.1634071	10.0838327	868	9.9161673	32
29	9.7529442	1838	10.2470558	9.8368636	2707	10.1631364	10.0839195	868	9.9160805	31
30	9.7531280	1838	10.2468720	9.8371343	2706	10.1628657	10.0840063	868	9.9159937	30
31	9.7533118	1836	10.2466882	9.8374049	2706	10.1625951	10.0840931	869	9.9159069	29
32	9.7534954	1836	10.2465046	9.8376755	2705	10.1623245	10.0841800	870	9.9158200	28
33	9.7536790	1834	10.2463210	9.8379460	2704	10.1620540	10.0842670	870	9.9157330	27
34	9.7538624	1833	10.2461376	9.8382164	2703	10.1617836	10.0843540	871	9.9156460	26
35	9.7540457	1831	10.2459543	9.8384867	2704	10.1615133	10.0844411	871	9.9155589	25
36	9.7542288	1831	10.2457712	9.8387571	2702	10.1612429	10.0845282	872	9.9154718	24
37	9.7544119	1830	10.2455831	9.8390273	2702	10.1609727	10.0846154	872	9.9153846	23
38	9.7545949	1828	10.2454051	9.8392975	2701	10.1607025	10.0847026	873	9.9152974	22
39	9.7547777	1827	10.2452223	9.8395676	2701	10.1604324	10.0847899	873	9.9152101	21
40	9.7549604	1827	10.2450396	9.8398377	2700	10.1601623	10.0848772	874	9.9151228	20
41	9.7551431	1825	10.2448569	9.8401077	2699	10.1598923	10.0849646	875	9.9150354	19
42	9.7553256	1824	10.2446744	9.8403776	2699	10.1596224	10.0850521	875	9.9149479	18
43	9.7555080	1822	10.2444920	9.8406475	2699	10.1593525	10.0851396	875	9.9148604	17
44	9.7556902	1822	10.2443098	9.8409174	2697	10.1590826	10.0852271	877	9.9147729	16
45	9.7558724	1820	10.2441276	9.8411871	2698	10.1588129	10.0853148	876	9.9146852	15
46	9.7560544	1820	10.2439456	9.8414569	2696	10.1585431	10.0854024	877	9.9145976	14
47	9.7562364	1818	10.2437636	9.8417265	2696	10.1582735	10.0854901	878	9.9145099	13
48	9.7564182	1817	10.2435818	9.8419961	2696	10.1580039	10.0855779	879	9.9144221	12
49	9.7565999	1816	10.2434001	9.8422657	2694	10.1577343	10.0856658	878	9.9143342	11
50	9.7567815	1815	10.2432185	9.8425351	2695	10.1574649	10.0857536	880	9.9142464	10
51	9.7569630	1814	10.2430370	9.8428046	2693	10.1571954	10.0858416	880	9.9141584	9
52	9.7571444	1812	10.2428556	9.8430739	2693	10.1569261	10.0859296	880	9.9140704	8
53	9.7573256	1812	10.2426744	9.8433432	2693	10.1566568	10.0860176	881	9.9139824	7
54	9.7575068	1810	10.2424932	9.8436125	2692	10.1563875	10.0861057	882	9.9138943	6
55	9.7576878	1809	10.2423122	9.8438817	2691	10.1561183	10.0861939	882	9.9138061	5
56	9.7578687	1808	10.2421313	9.8441508	2691	10.1558492	10.0862821	883	9.9137179	4
57	9.7580495	1807	10.2419505	9.8444199	2690	10.1555801	10.0863704	883	9.9136296	3
58	9.7582302	1806	10.2417698	9.8446889	2690	10.1553111	10.0864587	883	9.9135413	2
59	9.7584108	1805	10.2415892	9.8449579	2689	10.1550421	10.0865470	885	9.9134530	1
60	9.7585913		10.2414087	9.8452268		10.1547732	10.0866355		9.9133645	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

124° 55°

35° 144°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7585913		10.2414087	9.8452268		10.1547732	10.0866355		9.9133645	60
1	9.7587717	1804	10.2412283	9.8454956	2688	10.1545044	10.0867240	885	9.9132760	59
2	9.7589519	1802	10.2410481	9.8457644	2688	10.1542356	10.0868125	885	9.9131875	58
3	9.7591321	1802	10.2408679	9.8460332	2688	10.1539668	10.0869011	886	9.9130989	57
4	9.7593121	1800	10.2406879	9.8463018	2686	10.1536982	10.0869898	887	9.9130102	56
5	9.7594920	1799	10.2405080	9.8465705	2687	10.1534295	10.0870785	887	9.9129215	55
6	9.7596718	1798	10.2403282	9.8468390	2685	10.1531610	10.0871672	887	9.9128328	54
7	9.7598515	1797	10.2401485	9.8471075	2685	10.1528925	10.0872560	888	9.9127440	53
8	9.7600311	1796	10.2399689	9.8473760	2685	10.1526240	10.0873449	889	9.9126551	52
9	9.7602106	1795	10.2397894	9.8476444	2684	10.1523556	10.0874338	889	9.9125662	51
10	9.7603899	1793	10.2396101	9.8479127	2683	10.1520873	10.0875228	890	9.9124772	50
11	9.7605692	1793	10.2394308	9.8481810	2683	10.1518190	10.0876118	890	9.9123882	49
12	9.7607483	1791	10.2392517	9.8484492	2682	10.1515508	10.0877009	891	9.9122991	48
13	9.7609274	1791	10.2390726	9.8487174	2682	10.1512826	10.0877901	892	9.9122099	47
14	9.7611063	1789	10.2388937	9.8489855	2681	10.1510145	10.0878793	892	9.9121207	46
15	9.7612851	1788	10.2387149	9.8492536	2681	10.1507464	10.0879685	893	9.9120315	45
16	9.7614638	1787	10.2385362	9.8495216	2680	10.1504784	10.0880578	894	9.9119422	44
17	9.7616424	1786	10.2383576	9.8497896	2680	10.1502104	10.0881472	894	9.9118528	43
18	9.7618208	1784	10.2381792	9.8500575	2679	10.1499425	10.0882366	895	9.9117634	42
19	9.7619992	1784	10.2380008	9.8503253	2678	10.1496747	10.0883261	895	9.9116739	41
20	9.7621775	1783	10.2378225	9.8505931	2678	10.1494069	10.0884156	896	9.9115844	40
21	9.7623556	1781	10.2376444	9.8508608	2677	10.1491392	10.0885052	897	9.9114948	39
22	9.7625337	1781	10.2374663	9.8511285	2677	10.1488715	10.0885949	896	9.9114051	38
23	9.7627116	1779	10.2372884	9.8513961	2676	10.1486039	10.0886845	898	9.9113155	37
24	9.7628894	1778	10.2371106	9.8516637	2676	10.1483363	10.0887743	898	9.9112257	36
25	9.7630671	1777	10.2369329	9.8519312	2675	10.1480688	10.0888641	899	9.9111359	35
26	9.7632447	1776	10.2367553	9.8521987	2675	10.1478013	10.0889540	899	9.9110460	34
27	9.7634222	1775	10.2365778	9.8524661	2674	10.1475339	10.0890439	900	9.9109561	33
28	9.7635996	1774	10.2364004	9.8527335	2674	10.1472665	10.0891339	900	9.9108661	32
29	9.7637769	1773	10.2362231	9.8530008	2673	10.1469992	10.0892239	901	9.9107761	31
30	9.7639540	1771	10.2360460	9.8532680	2672	10.1467320	10.0893140	901	9.9106860	30
31	9.7641311	1771	10.2358689	9.8535352	2672	10.1464648	10.0894041	902	9.9105959	29
32	9.7643080	1769	10.2356920	9.8538023	2671	10.1461977	10.0894943	902	9.9105057	28
33	9.7644849	1769	10.2355151	9.8540694	2671	10.1459306	10.0895845	904	9.9104155	27
34	9.7646616	1767	10.2353384	9.8543365	2669	10.1456635	10.0896749	903	9.9103251	26
35	9.7648382	1766	10.2351618	9.8546034	2670	10.1453966	10.0897652	904	9.9102348	25
36	9.7650147	1765	10.2349853	9.8548704	2668	10.1451296	10.0898556	905	9.9101444	24
37	9.7651911	1764	10.2348089	9.8551372	2669	10.1448628	10.0899461	905	9.9100539	23
38	9.7653674	1763	10.2346326	9.8554041	2667	10.1445959	10.0900366	906	9.9099634	22
39	9.7655436	1762	10.2344564	9.8556708	2668	10.1443292	10.0901272	907	9.9098728	21
40	9.7657197	1761	10.2342803	9.8559376	2666	10.1440624	10.0902179	906	9.9097821	20
41	9.7658957	1760	10.2341043	9.8562042	2666	10.1437958	10.0903085	908	9.9096915	19
42	9.7660715	1758	10.2339285	9.8564708	2666	10.1435292	10.0903993	908	9.9096007	18
43	9.7662473	1758	10.2337527	9.8567374	2665	10.1432626	10.0904901	909	9.9095099	17
44	9.7664229	1756	10.2335771	9.8570039	2665	10.1429961	10.0905810	909	9.9094190	16
45	9.7665985	1756	10.2334015	9.8572704	2664	10.1427296	10.0906719	910	9.9093281	15
46	9.7667739	1754	10.2332261	9.8575368	2663	10.1424632	10.0907629	910	9.9092371	14
47	9.7669492	1753	10.2330508	9.8578031	2663	10.1421969	10.0908539	911	9.9091461	13
48	9.7671244	1752	10.2328756	9.8580694	2663	10.1419306	10.0909450	911	9.9090550	12
49	9.7672996	1752	10.2327004	9.8583357	2662	10.1416643	10.0910361	912	9.9089639	11
50	9.7674746	1750	10.2325254	9.8586019	2661	10.1413981	10.0911273	913	9.9088727	10
51	9.7676494	1748	10.2323506	9.8588680	2661	10.1411320	10.0912186	913	9.9087814	9
52	9.7678242	1748	10.2321758	9.8591341	2661	10.1408659	10.0913099	913	9.9086901	8
53	9.7679989	1747	10.2320011	9.8594002	2659	10.1405998	10.0914012	915	9.9085988	7
54	9.7681735	1746	10.2318265	9.8596661	2660	10.1403339	10.0914927	914	9.9085073	6
55	9.7683480	1745	10.2316520	9.8599321	2659	10.1400679	10.0915841	916	9.9084159	5
56	9.7685223	1743	10.2314777	9.8601980	2658	10.1398020	10.0916757	916	9.9083243	4
57	9.7686966	1743	10.2313034	9.8604638	2658	10.1395362	10.0917673	916	9.9082327	3
58	9.7688707	1741	10.2311293	9.8607296	2658	10.1392704	10.0918589	917	9.9081411	2
59	9.7690448	1741	10.2309552	9.8609954	2656	10.1390046	10.0919506	918	9.9080494	1
60	9.7692187	1739	10.2307813	9.8612610		10.1387390	10.0920424		9.9079576	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

125° 54°

36°										143°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7692187		10.2307813	9.8612610		10.1387390	10.0920424		9.9079576	60
1	9.7693925	1738	10.2306075	9.8615267	2657	10.1384733	10.0921342	918	9.9078658	59
2	9.7695662	1737	10.2304338	9.8617923	2656	10.1382077	10.0922260	918	9.9077740	58
3	9.7697398	1736	10.2302602	9.8620578	2655	10.1379422	10.0923180	920	9.9076820	57
4	9.7699134	1736	10.2300866	9.8623233	2655	10.1376767	10.0924099	919	9.9075901	56
5	9.7700868	1734	10.2299132	9.8625887	2654	10.1374113	10.0925020	921	9.9074980	55
6	9.7702601	1733	10.2297399	9.8628541	2654	10.1371459	10.0925941	921	9.9074059	54
7	9.7704332	1731	10.2295668	9.8631195	2654	10.1368805	10.0926862	921	9.9073138	53
8	9.7706063	1731	10.2293937	9.8633848	2653	10.1366152	10.0927784	922	9.9072216	52
9	9.7707793	1730	10.2292207	9.8636500	2652	10.1363500	10.0928707	923	9.9071293	51
10	9.7709522	1729	10.2290478	9.8639152	2652	10.1360848	10.0929630	923	9.9070370	50
11	9.7711249	1727	10.2288751	9.8641803	2651	10.1358197	10.0930554	924	9.9069446	49
12	9.7712976	1727	10.2287024	9.8644454	2651	10.1355546	10.0931478	924	9.9068522	48
13	9.7714702	1726	10.2285298	9.8647105	2651	10.1352895	10.0932403	925	9.9067597	47
14	9.7716426	1724	10.2283574	9.8649755	2650	10.1350245	10.0933329	926	9.9066671	46
15	9.7718150	1724	10.2281850	9.8652404	2649	10.1347596	10.0934255	926	9.9065745	45
16	9.7719872	1722	10.2280128	9.8655053	2649	10.1344947	10.0935181	926	9.9064819	44
17	9.7721593	1721	10.2278407	9.8657702	2649	10.1342298	10.0936108	927	9.9063892	43
18	9.7723314	1721	10.2276686	9.8660350	2648	10.1339650	10.0937036	928	9.9062964	42
19	9.7725033	1719	10.2274967	9.8662997	2647	10.1337003	10.0937964	928	9.9062036	41
20	9.7726751	1718	10.2273249	9.8665644	2647	10.1334356	10.0938893	929	9.9061107	40
21	9.7728468	1717	10.2271532	9.8668291	2647	10.1331709	10.0939823	930	9.9060177	39
22	9.7730185	1717	10.2269815	9.8670937	2646	10.1329063	10.0940753	930	9.9059247	38
23	9.7731900	1715	10.2268100	9.8673583	2646	10.1326417	10.0941683	930	9.9058317	37
24	9.7733614	1714	10.2266386	9.8676228	2645	10.1323772	10.0942614	931	9.9057386	36
25	9.7735327	1713	10.2264673	9.8678873	2645	10.1321127	10.0943546	932	9.9056454	35
26	9.7737039	1712	10.2262961	9.8681517	2644	10.1318483	10.0944478	932	9.9055522	34
27	9.7738749	1710	10.2261251	9.8684160	2643	10.1315840	10.0945411	933	9.9054589	33
28	9.7740459	1710	10.2259541	9.8686804	2644	10.1313196	10.0946344	933	9.9053656	32
29	9.7742168	1709	10.2257832	9.8689446	2642	10.1310554	10.0947278	934	9.9052722	31
30	9.7743876	1708	10.2256124	9.8692089	2643	10.1307911	10.0948213	935	9.9051787	30
31	9.7745583	1707	10.2254417	9.8694731	2642	10.1305269	10.0949148	935	9.9050852	29
32	9.7747288	1705	10.2252712	9.8697372	2641	10.1302628	10.0950084	936	9.9049916	28
33	9.7748993	1705	10.2251007	9.8700013	2641	10.1299987	10.0951020	936	9.9048980	27
34	9.7750697	1704	10.2249303	9.8702653	2640	10.1297347	10.0951957	937	9.9048043	26
35	9.7752399	1702	10.2247601	9.8705293	2640	10.1294707	10.0952894	937	9.9047106	25
36	9.7754101	1702	10.2245899	9.8707933	2640	10.1292067	10.0953832	938	9.9046168	24
37	9.7755801	1700	10.2244199	9.8710572	2639	10.1289428	10.0954770	938	9.9045230	23
38	9.7757501	1700	10.2242499	9.8713210	2638	10.1286790	10.0955709	939	9.9044291	22
39	9.7759199	1698	10.2240801	9.8715848	2638	10.1284152	10.0956649	940	9.9043351	21
40	9.7760897	1698	10.2239103	9.8718486	2638	10.1281514	10.0957589	940	9.9042411	20
41	9.7762593	1696	10.2237407	9.8721123	2637	10.1278877	10.0958530	941	9.9041470	19
42	9.7764289	1696	10.2235711	9.8723760	2637	10.1276240	10.0959471	941	9.9040529	18
43	9.7765983	1694	10.2234017	9.8726396	2636	10.1273604	10.0960413	942	9.9039587	17
44	9.7767676	1693	10.2232324	9.8729032	2636	10.1270968	10.0961356	943	9.9038644	16
45	9.7769369	1693	10.2230631	9.8731668	2636	10.1268332	10.0962299	943	9.9037701	15
46	9.7771060	1691	10.2228940	9.8734302	2634	10.1265698	10.0963243	944	9.9036757	14
47	9.7772750	1690	10.2227250	9.8736937	2635	10.1263063	10.0964187	944	9.9035813	13
48	9.7774439	1689	10.2225561	9.8739571	2634	10.1260429	10.0965132	945	9.9034868	12
49	9.7776128	1689	10.2223872	9.8742204	2633	10.1257796	10.0966077	945	9.9033923	11
50	9.7777815	1687	10.2222185	9.8744838	2634	10.1255162	10.0967023	946	9.9032977	10
51	9.7779501	1686	10.2220499	9.8747470	2632	10.1252530	10.0967969	946	9.9032031	9
52	9.7781186	1685	10.2218814	9.8750102	2632	10.1249898	10.0968916	947	9.9031084	8
53	9.7782870	1684	10.2217130	9.8752734	2632	10.1247266	10.0969864	948	9.9030136	7
54	9.7784553	1683	10.2215447	9.8755365	2631	10.1244635	10.0970812	948	9.9029188	6
55	9.7786235	1682	10.2213765	9.8757996	2631	10.1242004	10.0971761	949	9.9028239	5
56	9.7787916	1681	10.2212084	9.8760627	2631	10.1239373	10.0972711	950	9.9027289	4
57	9.7789596	1680	10.2210404	9.8763257	2630	10.1236743	10.0973661	950	9.9026339	3
58	9.7791275	1679	10.2208725	9.8765886	2629	10.1234114	10.0974611	950	9.9025389	2
59	9.7792953	1678	10.2207047	9.8768515	2629	10.1231485	10.0975562	951	9.9024438	1
60	9.7794630	1677	10.2205370	9.8771144	2629	10.1228856	10.0976514	952	9.9023486	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
126°										53°

37° 142°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7794630		10.2205370	9.8771144		10.1228856	10.0976514		9.9023486	60
		1676			2628			952		
1	9.7796306	1675	10.2203694	9.8773772	2628	10.1226228	10.0977466	953	9.9022534	59
2	9.7797981	1674	10.2202019	9.8776400	2627	10.1223600	10.0978419	953	9.9021581	58
3	9.7799655	1673	10.2200345	9.8779027	2627	10.1220973	10.0979372	954	9.9020628	57
4	9.7801328	1672	10.2198672	9.8781654	2627	10.1218346	10.0980326	955	9.9019674	56
5	9.7803000	1671	10.2197000	9.8784281	2626	10.1215719	10.0981281	955	9.9018719	55
6	9.7804671		10.2195329	9.8786907		10.1213093	10.0982236		9.9017764	54
		1670			2626			956		
7	9.7806341	1669	10.2193659	9.8789533	2625	10.1210467	10.0983192	956	9.9016808	53
8	9.7808010	1667	10.2191990	9.8792158	2624	10.1207842	10.0984148	957	9.9015852	52
9	9.7809677	1667	10.2190323	9.8794782	2625	10.1205218	10.0985105	957	9.9014895	51
10	9.7811344	1666	10.2188656	9.8797407	2624	10.1202593	10.0986062	958	9.9013938	50
11	9.7813010	1665	10.2186990	9.8800031	2623	10.1199969	10.0987020	959	9.9012980	49
12	9.7814675		10.2185325	9.8802654		10.1197346	10.0987979		9.9012021	48
		1664			2623			959		
13	9.7816339	1663	10.2183661	9.8805277	2623	10.1194723	10.0988938	960	9.9011062	47
14	9.7818002	1662	10.2181998	9.8807900	2622	10.1192100	10.0989898	960	9.9010102	46
15	9.7819664	1660	10.2180336	9.8810522	2622	10.1189478	10.0990858	961	9.9009142	45
16	9.7821324	1660	10.2178676	9.8813144	2621	10.1186856	10.0991819	962	9.9008181	44
17	9.7822984	1659	10.2177016	9.8815765	2621	10.1184235	10.0992781	962	9.9007219	43
18	9.7824643		10.2175357	9.8818386		10.1181614	10.0993743		9.9006257	42
		1658			2621			963		
19	9.7826301	1657	10.2173699	9.8821007	2620	10.1178993	10.0994706	963	9.9005294	41
20	9.7827958	1656	10.2172042	9.8823627	2619	10.1176373	10.0995669	964	9.9004331	40
21	9.7829614	1654	10.2170386	9.8826246	2620	10.1173754	10.0996633	964	9.9003367	39
22	9.7831268	1654	10.2168732	9.8828866	2618	10.1171134	10.0997597	965	9.9002403	38
23	9.7832922	1653	10.2167078	9.8831484	2619	10.1168516	10.0998562	966	9.9001438	37
24	9.7834575		10.2165425	9.8834103		10.1165897	10.0999528		9.9000472	36
		1652			2618			966		
25	9.7836227	1651	10.2163773	9.8836721	2617	10.1163279	10.1000494	967	9.8999506	35
26	9.7837878	1650	10.2162122	9.8839338	2618	10.1160662	10.1001461	967	9.8998539	34
27	9.7839528	1649	10.2160472	9.8841956	2616	10.1158044	10.1002428	968	9.8997572	33
28	9.7841177	1647	10.2158823	9.8844572	2617	10.1155428	10.1003396	968	9.8996604	32
29	9.7842824	1647	10.2157176	9.8847189	2616	10.1152811	10.1004364	969	9.8995636	31
30	9.7844471		10.2155529	9.8849805		10.1150195	10.1005333		9.8994667	30
		1646			2615			970		
31	9.7846117	1645	10.2153883	9.8852420	2615	10.1147580	10.1006303	970	9.8993697	29
32	9.7847762	1644	10.2152238	9.8855035	2615	10.1144965	10.1007273	971	9.8992727	28
33	9.7849406	1643	10.2150594	9.8857650	2614	10.1142350	10.1008244	972	9.8991756	27
34	9.7851049	1642	10.2148951	9.8860264	2614	10.1139736	10.1009216	972	9.8990784	26
35	9.7852691	1641	10.2147309	9.8862878	2614	10.1137122	10.1010188	972	9.8989812	25
36	9.7854332		10.2145668	9.8865492		10.1134508	10.1011160		9.8988840	24
		1640			2613			973		
37	9.7855972	1639	10.2144028	9.8868105	2613	10.1131895	10.1012133	974	9.8987867	23
38	9.7857611	1638	10.2142389	9.8870718	2612	10.1129282	10.1013107	974	9.8986893	22
39	9.7859249	1637	10.2140751	9.8873330	2612	10.1126670	10.1014081	975	9.8985919	21
40	9.7860886	1636	10.2139114	9.8875942	2612	10.1124058	10.1015056	976	9.8984944	20
41	9.7862522	1635	10.2137478	9.8878554	2611	10.1121446	10.1016032	976	9.8983968	19
42	9.7864157		10.2135843	9.8881165		10.1118835	10.1017008		9.8982992	18
		1634			2610			977		
43	9.7865791	1633	10.2134209	9.8883775	2611	10.1116225	10.1017985	977	9.8982015	17
44	9.7867424	1632	10.2132576	9.8886386	2610	10.1113614	10.1018962	978	9.8981038	16
45	9.7869056	1631	10.2130944	9.8888996	2609	10.1111004	10.1019940	978	9.8980060	15
46	9.7870687	1630	10.2129313	9.8891605	2609	10.1108395	10.1020918	979	9.8979082	14
47	9.7872317	1629	10.2127683	9.8894214	2609	10.1105786	10.1021897	980	9.8978103	13
48	9.7873946		10.2126054	9.8896823		10.1103177	10.1022877		9.8977123	12
		1628			2609			980		
49	9.7875574	1628	10.2124426	9.8899432	2608	10.1100568	10.1023857	981	9.8976143	11
50	9.7877202	1626	10.2122798	9.8902040	2607	10.1097960	10.1024838	981	9.8975162	10
51	9.7878828	1625	10.2121172	9.8904647	2607	10.1095353	10.1025819	982	9.8974181	9
52	9.7880453	1624	10.2119547	9.8907254	2607	10.1092746	10.1026801	983	9.8973199	8
53	9.7882077	1624	10.2117923	9.8909861	2607	10.1090139	10.1027784	983	9.8972216	7
54	9.7883701		10.2116299	9.8912468		10.1087532	10.1028767		9.8971233	6
		1622			2606			984		
55	9.7885323	1621	10.2114677	9.8915074	2605	10.1084926	10.1029751	984	9.8970249	5
56	9.7886944	1621	10.2113056	9.8917679	2606	10.1082321	10.1030735	985	9.8969265	4
57	9.7888565	1619	10.2111435	9.8920285	2605	10.1079715	10.1031720	986	9.8968280	3
58	9.7890184	1618	10.2109816	9.8922890	2604	10.1077110	10.1032706	986	9.8967294	2
59	9.7891802	1618	10.2108198	9.8925494	2604	10.1074506	10.1033692	987	9.8966308	1
60	9.7893420		10.2106580	9.8928098		10.1071902	10.1034679		9.8965321	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

127° 52°

38° 141°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7893420		10.2106580	9.8928098		10.1071902	10.1034679		9.8965321	60
1	9.7895036	1616	10.2104964	9.8930702	2604	10.1069298	10.1035666	987	9.8964334	59
2	9.7896652	1616	10.2103348	9.8933306	2604	10.1066694	10.1036654	988	9.8963346	58
3	9.7898266	1614	10.2101734	9.8935909	2603	10.1064091	10.1037642	988	9.8962358	57
4	9.7899880	1614	10.2100120	9.8938511	2602	10.1061489	10.1038631	989	9.8961369	56
5	9.7901493	1613	10.2098507	9.8941114	2603	10.1058886	10.1039621	990	9.8960379	55
6	9.7903104	1611	10.2096896	9.8943715	2601	10.1056285	10.1040611	990	9.8959389	54
7	9.7904715	1611	10.2095285	9.8946317	2602	10.1053683	10.1041602	991	9.8958398	53
8	9.7906325	1610	10.2093675	9.8948918	2601	10.1051082	10.1042594	992	9.8957406	52
9	9.7907933	1608	10.2092067	9.8951519	2601	10.1048481	10.1043586	992	9.8956414	51
10	9.7909541	1608	10.2090459	9.8954119	2600	10.1045881	10.1044578	992	9.8955422	50
11	9.7911148	1607	10.2088852	9.8956719	2600	10.1043281	10.1045571	993	9.8954429	49
12	9.7912754	1606	10.2087246	9.8959319	2600	10.1040681	10.1046565	994	9.8953435	48
13	9.7914359	1605	10.2085641	9.8961918	2599	10.1038082	10.1047560	995	9.8952440	47
14	9.7915963	1604	10.2084037	9.8964517	2599	10.1035483	10.1048555	995	9.8951445	46
15	9.7917566	1603	10.2082434	9.8967116	2599	10.1032884	10.1049550	995	9.8950450	45
16	9.7919168	1602	10.2080832	9.8969714	2598	10.1030286	10.1050547	997	9.8949453	44
17	9.7920769	1601	10.2079231	9.8972312	2598	10.1027688	10.1051543	996	9.8948457	43
18	9.7922369	1600	10.2077631	9.8974910	2598	10.1025090	10.1052541	998	9.8947459	42
19	9.7923968	1599	10.2076032	9.8977507	2597	10.1022493	10.1053539	998	9.8946461	41
20	9.7925566	1598	10.2074434	9.8980104	2597	10.1019896	10.1054537	998	9.8945463	40
21	9.7927163	1597	10.2072837	9.8982700	2596	10.1017300	10.1055537	1000	9.8944463	39
22	9.7928760	1597	10.2071240	9.8985296	2596	10.1014704	10.1056536	999	9.8943464	38
23	9.7930355	1595	10.2069645	9.8987892	2596	10.1012108	10.1057537	1001	9.8942463	37
24	9.7931949	1594	10.2068051	9.8990487	2595	10.1009513	10.1058538	1001	9.8941462	36
25	9.7933543	1594	10.2066457	9.8993082	2595	10.1006918	10.1059539	1001	9.8940461	35
26	9.7935135	1592	10.2064865	9.8995677	2595	10.1004323	10.1060542	1003	9.8939458	34
27	9.7936727	1592	10.2063273	9.8998271	2594	10.1001729	10.1061544	1002	9.8938456	33
28	9.7938317	1590	10.2061683	9.9000865	2594	10.0999135	10.1062548	1004	9.8937452	32
29	9.7939907	1590	10.2060093	9.9003459	2594	10.0996541	10.1063552	1004	9.8936448	31
30	9.7941496	1589	10.2058504	9.9006052	2593	10.0993948	10.1064556	1004	9.8935444	30
31	9.7943083	1587	10.2056917	9.9008645	2593	10.0991355	10.1065561	1005	9.8934439	29
32	9.7944670	1587	10.2055330	9.9011237	2592	10.0988763	10.1066567	1006	9.8933433	28
33	9.7946256	1586	10.2053744	9.9013830	2593	10.0986170	10.1067574	1007	9.8932426	27
34	9.7947841	1585	10.2052159	9.9016422	2592	10.0983578	10.1068581	1007	9.8931419	26
35	9.7949425	1584	10.2050575	9.9019013	2591	10.0980987	10.1069588	1007	9.8930412	25
36	9.7951008	1583	10.2048992	9.9021604	2591	10.0978396	10.1070596	1008	9.8929404	24
37	9.7952590	1582	10.2047410	9.9024195	2591	10.0975805	10.1071605	1009	9.8928395	23
38	9.7954171	1581	10.2045829	9.9026786	2591	10.0973214	10.1072615	1010	9.8927385	22
39	9.7955751	1580	10.2044249	9.9029376	2590	10.0970624	10.1073625	1010	9.8926375	21
40	9.7957330	1579	10.2042670	9.9031966	2590	10.0968034	10.1074635	1010	9.8925365	20
41	9.7958909	1579	10.2041091	9.9034555	2589	10.0965445	10.1075646	1011	9.8924354	19
42	9.7960486	1577	10.2039514	9.9037144	2589	10.0962856	10.1076658	1012	9.8923342	18
43	9.7962062	1576	10.2037938	9.9039733	2589	10.0960267	10.1077671	1013	9.8922329	17
44	9.7963638	1576	10.2036362	9.9042321	2588	10.0957679	10.1078684	1013	9.8921316	16
45	9.7965212	1574	10.2034788	9.9044910	2589	10.0955090	10.1079697	1013	9.8920303	15
46	9.7966786	1574	10.2033214	9.9047497	2587	10.0952503	10.1080711	1014	9.8919289	14
47	9.7968359	1573	10.2031641	9.9050085	2588	10.0949915	10.1081726	1015	9.8918274	13
48	9.7969930	1571	10.2030070	9.9052672	2587	10.0947328	10.1082742	1016	9.8917258	12
49	9.7971501	1571	10.2028499	9.9055259	2587	10.0944741	10.1083758	1016	9.8916242	11
50	9.7973071	1570	10.2026929	9.9057845	2586	10.0942155	10.1084774	1016	9.8915226	10
51	9.7974640	1569	10.2025360	9.9060431	2586	10.0939569	10.1085792	1018	9.8914208	9
52	9.7976208	1568	10.2023792	9.9063017	2586	10.0936983	10.1086809	1017	9.8913191	8
53	9.7977775	1567	10.2022225	9.9065603	2586	10.0934397	10.1087828	1019	9.8912172	7
54	9.7979341	1566	10.2020659	9.9068188	2585	10.0931812	10.1088847	1019	9.8911153	6
55	9.7980906	1565	10.2019094	9.9070773	2585	10.0929227	10.1089867	1020	9.8910133	5
56	9.7982470	1564	10.2017530	9.9073357	2584	10.0926643	10.1090887	1020	9.8909113	4
57	9.7984034	1564	10.2015966	9.9075941	2584	10.0924059	10.1091908	1021	9.8908092	3
58	9.7985596	1562	10.2014404	9.9078525	2584	10.0921475	10.1092929	1021	9.8907071	2
59	9.7987158	1562	10.2012842	9.9081109	2584	10.0918891	10.1093951	1022	9.8906049	1
60	9.7988718	1560	10.2011282	9.9083692	2583	10.0916308	10.1094974	1023	9.8905026	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

128° 51°

39°									140°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.7988718	1560	10.2011282	9.9083692	2583	10.0916308	10.1094974	1023	9.8905026	60
1	9.7990278	1558	10.2009722	9.9086275	2583	10.0913725	10.1095997	1024	9.8904003	59
2	9.7991836	1558	10.2008164	9.9088858	2582	10.0911142	10.1097021	1025	9.8902979	58
3	9.7993394	1557	10.2006606	9.9091440	2582	10.0908560	10.1098046	1025	9.8901954	57
4	9.7994951	1556	10.2005049	9.9094022	2581	10.0905978	10.1099071	1026	9.8900929	56
5	9.7996507	1555	10.2003493	9.9096603	2582	10.0903397	10.1100097	1026	9.8899903	55
6	9.7998062	1554	10.2001938	9.9099185	2581	10.0900815	10.1101123	1027	9.8898877	54
7	9.7999616	1553	10.2000384	9.9101766	2581	10.0898234	10.1102150	1028	9.8897850	53
8	9.8001169	1552	10.1998831	9.9104347	2580	10.0895653	10.1103178	1028	9.8896822	52
9	9.8002721	1551	10.1997279	9.9106927	2580	10.0893073	10.1104206	1029	9.8895794	51
10	9.8004272	1551	10.1995728	9.9109507	2580	10.0890493	10.1105235	1029	9.8894765	50
11	9.8005823	1549	10.1994177	9.9112087	2579	10.0887913	10.1106264	1030	9.8893736	49
12	9.8007372	1549	10.1992628	9.9114666	2579	10.0885334	10.1107294	1031	9.8892706	48
13	9.8008921	1547	10.1991079	9.9117245	2579	10.0882755	10.1108325	1031	9.8891675	47
14	9.8010468	1547	10.1989532	9.9119824	2579	10.0880176	10.1109356	1032	9.8890644	46
15	9.8012015	1546	10.1987985	9.9122403	2578	10.0877597	10.1110388	1032	9.8889612	45
16	9.8013561	1545	10.1986439	9.9124981	2578	10.0875019	10.1111420	1033	9.8888580	44
17	9.8015106	1543	10.1984894	9.9127559	2578	10.0872441	10.1112453	1034	9.8887547	43
18	9.8016649	1543	10.1983351	9.9130137	2577	10.0869863	10.1113487	1034	9.8886513	42
19	9.8018192	1543	10.1981808	9.9132714	2577	10.0867286	10.1114521	1035	9.8885479	41
20	9.8019735	1541	10.1980265	9.9135291	2577	10.0864709	10.1115556	1036	9.8884444	40
21	9.8021276	1540	10.1978724	9.9137868	2576	10.0862132	10.1116592	1036	9.8883408	39
22	9.8022816	1539	10.1977184	9.9140444	2576	10.0859556	10.1117628	1037	9.8882372	38
23	9.8024355	1539	10.1975645	9.9143020	2576	10.0856980	10.1118665	1037	9.8881335	37
24	9.8025894	1537	10.1974106	9.9145596	2575	10.0854404	10.1119702	1038	9.8880298	36
25	9.8027431	1537	10.1972569	9.9148171	2576	10.0851829	10.1120740	1039	9.8879260	35
26	9.8028968	1536	10.1971032	9.9150747	2575	10.0849253	10.1121779	1039	9.8878221	34
27	9.8030504	1534	10.1969496	9.9153322	2574	10.0846678	10.1122818	1040	9.8877182	33
28	9.8032038	1534	10.1967962	9.9155896	2575	10.0844104	10.1123858	1040	9.8876142	32
29	9.8033572	1533	10.1966428	9.9158471	2574	10.0841529	10.1124898	1041	9.8875102	31
30	9.8035105	1532	10.1964895	9.9161045	2573	10.0838955	10.1125939	1042	9.8874061	30
31	9.8036637	1531	10.1963363	9.9163618	2574	10.0836382	10.1126981	1042	9.8873019	29
32	9.8038168	1531	10.1961832	9.9166192	2573	10.0833808	10.1128023	1043	9.8871977	28
33	9.8039699	1529	10.1960301	9.9168765	2573	10.0831235	10.1129066	1044	9.8870934	27
34	9.8041228	1529	10.1958772	9.9171338	2573	10.0828662	10.1130110	1044	9.8869890	26
35	9.8042757	1527	10.1957243	9.9173911	2572	10.0826089	10.1131154	1045	9.8868846	25
36	9.8044284	1527	10.1955716	9.9176483	2572	10.0823517	10.1132199	1045	9.8867801	24
37	9.8045811	1525	10.1954189	9.9179055	2572	10.0820945	10.1133244	1046	9.8866756	23
38	9.8047336	1525	10.1952664	9.9181627	2571	10.0818373	10.1134290	1047	9.8865710	22
39	9.8048861	1524	10.1951139	9.9184198	2571	10.0815802	10.1135337	1047	9.8864663	21
40	9.8050385	1523	10.1949615	9.9186769	2571	10.0813231	10.1136384	1048	9.8863616	20
41	9.8051908	1522	10.1948092	9.9189340	2571	10.0810660	10.1137432	1049	9.8862568	19
42	9.8053430	1521	10.1946570	9.9191911	2570	10.0808089	10.1138481	1049	9.8861519	18
43	9.8054951	1521	10.1945049	9.9194481	2570	10.0805519	10.1139530	1050	9.8860470	17
44	9.8056472	1519	10.1943528	9.9197051	2570	10.0802949	10.1140580	1050	9.8859420	16
45	9.8057991	1519	10.1942009	9.9199621	2570	10.0800379	10.1141630	1051	9.8858370	15
46	9.8059510	1517	10.1940490	9.9202191	2569	10.0797809	10.1142681	1052	9.8857319	14
47	9.8061027	1517	10.1938973	9.9204760	2569	10.0795240	10.1143733	1052	9.8856267	13
48	9.8062544	1516	10.1937456	9.9207329	2569	10.0792671	10.1144785	1053	9.8855215	12
49	9.8064060	1515	10.1935940	9.9209898	2568	10.0790102	10.1145838	1053	9.8854162	11
50	9.8065575	1514	10.1934425	9.9212466	2568	10.0787534	10.1146891	1054	9.8853109	10
51	9.8067089	1513	10.1932911	9.9215034	2568	10.0784966	10.1147945	1055	9.8852055	9
52	9.8068602	1512	10.1931398	9.9217602	2568	10.0782398	10.1149000	1055	9.8851000	8
53	9.8070114	1512	10.1929886	9.9220170	2567	10.0779830	10.1150055	1056	9.8849945	7
54	9.8071626	1510	10.1928374	9.9222737	2567	10.0777263	10.1151111	1057	9.8848889	6
55	9.8073136	1510	10.1926864	9.9225304	2567	10.0774696	10.1152168	1057	9.8847832	5
56	9.8074646	1508	10.1925354	9.9227871	2566	10.0772129	10.1153225	1058	9.8846775	4
57	9.8076154	1508	10.1923846	9.9230437	2567	10.0769563	10.1154283	1058	9.8845717	3
58	9.8077662	1507	10.1922338	9.9233004	2566	10.0766996	10.1155341	1060	9.8844659	2
59	9.8079169	1506	10.1920831	9.9235570	2565	10.0764430	10.1156401	1059	9.8843599	1
60	9.8080675		10.1919325	9.9238135		10.0761865	10.1157460		9.8842540	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
129°										50°

40°											139°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.8080675	1505	10.1919325	9.9238135	2566	10.0761865	10.1157460	1061	9.8842540	60
1	9.8082180	1504	10.1917820	9.9240701	2565	10.0759299	10.1158521	1061	9.8841479	59
2	9.8083684	1504	10.1916316	9.9243266	2565	10.0756734	10.1159582	1061	9.8840418	58
3	9.8085188	1502	10.1914812	9.9245831	2565	10.0754169	10.1160643	1063	9.8839357	57
4	9.8086690	1502	10.1913310	9.9248396	2564	10.0751604	10.1161706	1062	9.8838294	56
5	9.8088192	1500	10.1911808	9.9250960	2564	10.0749040	10.1162768	1064	9.8837232	55
6	9.8089692	1500	10.1910308	9.9253524	2564	10.0746476	10.1163832	1064	9.8836168	54
7	9.8091192	1499	10.1908808	9.9256088	2564	10.0743912	10.1164896	1065	9.8835104	53
8	9.8092691	1498	10.1907309	9.9258652	2563	10.0741348	10.1165961	1065	9.8834039	52
9	9.8094189	1497	10.1905811	9.9261215	2563	10.0738785	10.1167026	1066	9.8832974	51
10	9.8095686	1496	10.1904314	9.9263778	2563	10.0736222	10.1168092	1067	9.8831908	50
11	9.8097182	1496	10.1902818	9.9266341	2563	10.0733659	10.1169159	1071	9.8830841	49
12	9.8098678	1494	10.1901322	9.9268904	2562	10.0731096	10.1170226	1067	9.8829774	48
13	9.8100172	1494	10.1899828	9.9271466	2562	10.0728534	10.1171294	1068	9.8828706	47
14	9.8101666	1493	10.1898334	9.9274028	2562	10.0725972	10.1172362	1068	9.8827638	46
15	9.8103159	1491	10.1896841	9.9276590	2562	10.0723410	10.1173432	1070	9.8826568	45
16	9.8104650	1491	10.1895350	9.9279152	2561	10.0720848	10.1174501	1069	9.8825499	44
17	9.8106141	1490	10.1893859	9.9281713	2561	10.0718287	10.1175572	1071	9.8824428	43
18	9.8107631	1490	10.1892369	9.9284274	2561	10.0715726	10.1176643	1071	9.8823357	42
19	9.8109121	1488	10.1890879	9.9286835	2561	10.0713165	10.1177715	1072	9.8822285	41
20	9.8110609	1487	10.1889391	9.9289396	2560	10.0710604	10.1178787	1072	9.8821213	40
21	9.8112096	1487	10.1887904	9.9291956	2560	10.0708044	10.1179860	1073	9.8820140	39
22	9.8113583	1486	10.1886417	9.9294516	2560	10.0705484	10.1180933	1073	9.8819067	38
23	9.8115069	1485	10.1884931	9.9297076	2560	10.0702924	10.1182008	1075	9.8817992	37
24	9.8116554	1484	10.1883446	9.9299636	2559	10.0700364	10.1183082	1074	9.8816918	36
25	9.8118038	1483	10.1881962	9.9302195	2560	10.0697805	10.1184158	1076	9.8815842	35
26	9.8119521	1482	10.1880479	9.9304755	2559	10.0695245	10.1185234	1076	9.8814766	34
27	9.8121003	1481	10.1878997	9.9307314	2558	10.0692686	10.1186311	1077	9.8813689	33
28	9.8122484	1481	10.1877516	9.9309872	2559	10.0690128	10.1187388	1077	9.8812612	32
29	9.8123965	1479	10.1876035	9.9312431	2558	10.0687569	10.1188466	1078	9.8811534	31
30	9.8125444	1479	10.1874556	9.9314989	2558	10.0685011	10.1189545	1079	9.8810455	30
31	9.8126923	1478	10.1873077	9.9317547	2558	10.0682453	10.1190624	1080	9.8809376	29
32	9.8128401	1477	10.1871599	9.9320105	2557	10.0679895	10.1191704	1081	9.8808296	28
33	9.8129878	1476	10.1870122	9.9322662	2558	10.0677338	10.1192785	1081	9.8807215	27
34	9.8131354	1475	10.1868646	9.9325220	2557	10.0674780	10.1193866	1082	9.8806134	26
35	9.8132829	1474	10.1867171	9.9327777	2557	10.0672223	10.1194948	1082	9.8805052	25
36	9.8134303	1474	10.1865697	9.9330334	2556	10.0669666	10.1196030	1083	9.8803970	24
37	9.8135777	1473	10.1864223	9.9332890	2556	10.0667110	10.1197113	1084	9.8802887	23
38	9.8137250	1471	10.1862750	9.9335446	2557	10.0664554	10.1198197	1084	9.8801803	22
39	9.8138721	1471	10.1861279	9.9338003	2556	10.0661997	10.1199281	1085	9.8800719	21
40	9.8140192	1470	10.1859808	9.9340559	2555	10.0659441	10.1200366	1086	9.8799634	20
41	9.8141662	1469	10.1858338	9.9343114	2556	10.0656886	10.1201452	1086	9.8798548	19
42	9.8143131	1469	10.1856869	9.9345670	2555	10.0654330	10.1202538	1087	9.8797462	18
43	9.8144600	1467	10.1855400	9.9348225	2555	10.0651775	10.1203625	1088	9.8796375	17
44	9.8146067	1467	10.1853933	9.9350780	2555	10.0649220	10.1204713	1088	9.8795287	16
45	9.8147534	1465	10.1852466	9.9353335	2554	10.0646665	10.1205801	1089	9.8794199	15
46	9.8148999	1465	10.1851001	9.9355889	2555	10.0644111	10.1206890	1089	9.8793110	14
47	9.8150464	1464	10.1849536	9.9358444	2554	10.0641556	10.1207979	1091	9.8792021	13
48	9.8151928	1463	10.1848072	9.9360998	2554	10.0639002	10.1209070	1090	9.8790930	12
49	9.8153391	1463	10.1846609	9.9363552	2553	10.0636448	10.1210160	1092	9.8789840	11
50	9.8154854	1461	10.1845146	9.9366105	2554	10.0633895	10.1211252	1092	9.8788748	10
51	9.8156315	1461	10.1843685	9.9368659	2553	10.0631341	10.1212344	1093	9.8787656	9
52	9.8157776	1459	10.1842224	9.9371212	2553	10.0628788	10.1213437	1093	9.8786563	8
53	9.8159235	1459	10.1840765	9.9373765	2553	10.0626235	10.1214530	1094	9.8785470	7
54	9.8160694	1458	10.1839306	9.9376318	2553	10.0623682	10.1215624	1095	9.8784376	6
55	9.8162152	1457	10.1837848	9.9378871	2552	10.0621129	10.1216719	1095	9.8783281	5
56	9.8163609	1457	10.1836391	9.9381423	2552	10.0618577	10.1217814	1096	9.8782186	4
57	9.8165066	1455	10.1834934	9.9383975	2552	10.0616025	10.1218910	1096	9.8781090	3
58	9.8166521	1454	10.1833479	9.9386527	2552	10.0613473	10.1220006	1098	9.8779994	2
59	9.8167975	1454	10.1832025	9.9389079	2552	10.0610921	10.1221104	1097	9.8778896	1
60	9.8169429		10.1830571	9.9391631		10.0608369	10.1222201		9.8777799	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
130°										49°

41° 138°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.8169429		10.1830571	9.9391631		10.0608369	10.1222201		9.8777799	60
1	9.8170882	1453	10.1829118	9.9394182	2551	10.0605818	10.1223300	1099	9.8776700	59
2	9.8172334	1452	10.1827666	9.9396733	2551	10.0603267	10.1224399	1099	9.8775601	58
3	9.8173785	1451	10.1826215	9.9399284	2551	10.0600716	10.1225499	1100	9.8774501	57
4	9.8175235	1450	10.1824765	9.9401835	2551	10.0598165	10.1226599	1100	9.8773401	56
5	9.8176685	1450	10.1823315	9.9404385	2550	10.0595615	10.1227700	1101	9.8772300	55
6	9.8178133	1448	10.1821867	9.9406936	2551	10.0593064	10.1228802	1102	9.8771198	54
7	9.8179581	1448	10.1820419	9.9409486	2550	10.0590514	10.1229904	1102	9.8770096	53
8	9.8181028	1447	10.1818972	9.9412036	2550	10.0587964	10.1231007	1103	9.8768993	52
9	9.8182474	1446	10.1817526	9.9414585	2549	10.0585415	10.1232111	1104	9.8767889	51
10	9.8183919	1445	10.1816081	9.9417135	2550	10.0582865	10.1233215	1104	9.8766785	50
11	9.8185364	1445	10.1814636	9.9419684	2549	10.0580316	10.1234320	1105	9.8765680	49
12	9.8186807	1443	10.1813193	9.9422233	2549	10.0577767	10.1235426	1106	9.8764574	48
13	9.8188250	1443	10.1811750	9.9424782	2549	10.0575218	10.1236532	1106	9.8763468	47
14	9.8189692	1442	10.1810308	9.9427331	2549	10.0572669	10.1237639	1107	9.8762361	46
15	9.8191133	1441	10.1808867	9.9429879	2548	10.0570121	10.1238747	1108	9.8761253	45
16	9.8192573	1440	10.1807427	9.9432428	2549	10.0567572	10.1239855	1108	9.8760145	44
17	9.8194012	1439	10.1805988	9.9434976	2548	10.0565024	10.1240964	1109	9.8759036	43
18	9.8195450	1438	10.1804550	9.9437524	2548	10.0562476	10.1242073	1109	9.8757927	42
19	9.8196888	1438	10.1803112	9.9440072	2548	10.0559928	10.1243184	1111	9.8756816	41
20	9.8198325	1437	10.1801675	9.9442619	2547	10.0557381	10.1244294	1110	9.8755706	40
21	9.8199761	1436	10.1800239	9.9445166	2547	10.0554834	10.1245406	1112	9.8754594	39
22	9.8201196	1435	10.1798804	9.9447714	2548	10.0552286	10.1246518	1112	9.8753482	38
23	9.8202630	1434	10.1797370	9.9450261	2547	10.0549739	10.1247631	1113	9.8752369	37
24	9.8204063	1433	10.1795937	9.9452807	2546	10.0547193	10.1248744	1113	9.8751256	36
25	9.8205496	1433	10.1794504	9.9455354	2547	10.0544646	10.1249858	1114	9.8750142	35
26	9.8206927	1431	10.1793073	9.9457900	2546	10.0542100	10.1250973	1115	9.8749027	34
27	9.8208358	1431	10.1791642	9.9460447	2547	10.0539553	10.1252088	1115	9.8747912	33
28	9.8209788	1430	10.1790212	9.9462993	2546	10.0537007	10.1253205	1117	9.8746795	32
29	9.8211217	1429	10.1788783	9.9465539	2546	10.0534461	10.1254321	1116	9.8745679	31
30	9.8212646	1429	10.1787354	9.9468084	2545	10.0531916	10.1255439	1118	9.8744561	30
31	9.8214073	1427	10.1785927	9.9470630	2546	10.0529370	10.1256557	1118	9.8743443	29
32	9.8215500	1427	10.1784500	9.9473175	2545	10.0526825	10.1257675	1118	9.8742325	28
33	9.8216926	1426	10.1783074	9.9475720	2545	10.0524280	10.1258795	1120	9.8741205	27
34	9.8218351	1425	10.1781649	9.9478265	2545	10.0521735	10.1259915	1120	9.8740085	26
35	9.8219775	1424	10.1780225	9.9480810	2545	10.0519190	10.1261035	1120	9.8738965	25
36	9.8221198	1423	10.1778802	9.9483355	2545	10.0516645	10.1262156	1121	9.8737844	24
37	9.8222621	1423	10.1777379	9.9485899	2544	10.0514101	10.1263278	1122	9.8736722	23
38	9.8224042	1421	10.1775958	9.9488443	2544	10.0511557	10.1264401	1123	9.8735599	22
39	9.8225463	1421	10.1774537	9.9490987	2544	10.0509013	10.1265524	1123	9.8734476	21
40	9.8226883	1420	10.1773117	9.9493531	2544	10.0506469	10.1266648	1124	9.8733352	20
41	9.8228302	1419	10.1771698	9.9496075	2544	10.0503925	10.1267773	1125	9.8732227	19
42	9.8229721	1419	10.1770279	9.9498619	2544	10.0501381	10.1268898	1125	9.8731102	18
43	9.8231138	1417	10.1768862	9.9501162	2543	10.0498838	10.1270024	1126	9.8729976	17
44	9.8232555	1417	10.1767445	9.9503705	2543	10.0496295	10.1271151	1127	9.8728849	16
45	9.8233971	1416	10.1766029	9.9506248	2543	10.0493752	10.1272278	1127	9.8727722	15
46	9.8235386	1415	10.1764614	9.9508791	2543	10.0491209	10.1273406	1128	9.8726594	14
47	9.8236800	1414	10.1763200	9.9511334	2543	10.0488666	10.1274534	1128	9.8725466	13
48	9.8238213	1413	10.1761787	9.9513876	2542	10.0486124	10.1275663	1129	9.8724337	12
49	9.8239626	1411	10.1760374	9.9516419	2543	10.0483581	10.1276793	1130	9.8723207	11
50	9.8241037	1411	10.1758963	9.9518961	2542	10.0481039	10.1277924	1131	9.8722076	10
51	9.8242448	1410	10.1757552	9.9521503	2542	10.0478497	10.1279055	1131	9.8720945	9
52	9.8243858	1409	10.1756142	9.9524045	2542	10.0475955	10.1280187	1132	9.8719813	8
53	9.8245267	1409	10.1754733	9.9526587	2542	10.0473413	10.1281319	1132	9.8718681	7
54	9.8246676	1407	10.1753324	9.9529128	2541	10.0470872	10.1282452	1133	9.8717548	6
55	9.8248083	1407	10.1751917	9.9531670	2542	10.0468330	10.1283586	1134	9.8716414	5
56	9.8249490	1406	10.1750510	9.9534211	2541	10.0465789	10.1284721	1135	9.8715279	4
57	9.8250896	1405	10.1749104	9.9536752	2541	10.0463248	10.1285856	1135	9.8714144	3
58	9.8252301	1404	10.1747699	9.9539293	2541	10.0460707	10.1286992	1136	9.8713008	2
59	9.8253705	1404	10.1746295	9.9541834	2541	10.0458166	10.1288128	1136	9.8711872	1
60	9.8255109		10.1744891	9.9544374	2540	10.0455626	10.1289265	1137	9.8710735	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

131° 48°

42°										137°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.8255109		10.1744891	9.9544374		10.0455626	10.1289265		9.8710735	60
1	9.8256512	1403	10.1743488	9.9546915	2541	10.0453085	10.1290403	1138	9.8709597	59
2	9.8257913	1401	10.1742087	9.9549455	2540	10.0450545	10.1291542	1139	9.8708458	58
3	9.8259314	1401	10.1740686	9.9551995	2540	10.0448005	10.1292681	1139	9.8707319	57
4	9.8260715	1401	10.1739285	9.9554535	2540	10.0445465	10.1293821	1140	9.8706179	56
5	9.8262114	1399	10.1737886	9.9557075	2540	10.0442925	10.1294961	1140	9.8705039	55
6	9.8263512	1398	10.1736488	9.9559615	2540	10.0440385	10.1296102	1141	9.8703898	54
7	9.8264910	1398	10.1735090	9.9562154	2539	10.0437846	10.1297244	1142	9.8702756	53
8	9.8266307	1397	10.1733693	9.9564694	2540	10.0435306	10.1298387	1143	9.8701613	52
9	9.8267703	1396	10.1732297	9.9567233	2539	10.0432767	10.1299530	1143	9.8700470	51
10	9.8269098	1395	10.1730902	9.9569772	2539	10.0430228	10.1300674	1144	9.8699326	50
11	9.8270493	1395	10.1729507	9.9572311	2539	10.0427689	10.1301818	1144	9.8698182	49
12	9.8271887	1394	10.1728113	9.9574850	2539	10.0425150	10.1302963	1145	9.8697037	48
13	9.8273279	1392	10.1726721	9.9577389	2539	10.0422611	10.1304109	1146	9.8695891	47
14	9.8274671	1392	10.1725329	9.9579927	2538	10.0420073	10.1305256	1147	9.8694744	46
15	9.8276063	1392	10.1723937	9.9582465	2538	10.0417535	10.1306403	1147	9.8693597	45
16	9.8277453	1390	10.1722547	9.9585004	2539	10.0414996	10.1307551	1148	9.8692449	44
17	9.8278843	1390	10.1721157	9.9587542	2538	10.0412458	10.1308699	1148	9.8691301	43
18	9.8280231	1388	10.1719769	9.9590080	2538	10.0409920	10.1309848	1149	9.8690152	42
19	9.8281619	1388	10.1718381	9.9592618	2538	10.0407382	10.1310998	1150	9.8689002	41
20	9.8283006	1387	10.1716994	9.9595155	2537	10.0404845	10.1312149	1151	9.8687851	40
21	9.8284393	1387	10.1715607	9.9597693	2538	10.0402307	10.1313300	1151	9.8686700	39
22	9.8285778	1385	10.1714222	9.9600230	2537	10.0399770	10.1314452	1152	9.8685548	38
23	9.8287163	1385	10.1712837	9.9602767	2537	10.0397233	10.1315604	1152	9.8684396	37
24	9.8288547	1384	10.1711453	9.9605305	2538	10.0394695	10.1316758	1154	9.8683242	36
25	9.8289930	1383	10.1710070	9.9607842	2537	10.0392158	10.1317912	1154	9.8682088	35
26	9.8291312	1382	10.1708688	9.9610378	2536	10.0389622	10.1319066	1154	9.8680934	34
27	9.8292694	1382	10.1707306	9.9612915	2537	10.0387085	10.1320221	1155	9.8679779	33
28	9.8294075	1381	10.1705925	9.9615452	2537	10.0384548	10.1321377	1156	9.8678623	32
29	9.8295454	1379	10.1704546	9.9617988	2536	10.0382012	10.1322534	1157	9.8677466	31
30	9.8296833	1379	10.1703167	9.9620525	2537	10.0379475	10.1323691	1157	9.8676309	30
31	9.8298212	1379	10.1701788	9.9623061	2536	10.0376939	10.1324849	1158	9.8675151	29
32	9.8299589	1377	10.1700411	9.9625597	2536	10.0374403	10.1326008	1159	9.8673992	28
33	9.8300966	1377	10.1699034	9.9628133	2536	10.0371867	10.1327167	1159	9.8672833	27
34	9.8302342	1376	10.1697658	9.9630669	2536	10.0369331	10.1328327	1160	9.8671673	26
35	9.8303717	1375	10.1696283	9.9633204	2535	10.0366796	10.1329488	1161	9.8670512	25
36	9.8305091	1374	10.1694909	9.9635740	2536	10.0364260	10.1330649	1161	9.8669351	24
37	9.8306464	1373	10.1693536	9.9638275	2535	10.0361725	10.1331811	1162	9.8668189	23
38	9.8307837	1373	10.1692163	9.9640811	2536	10.0359189	10.1332974	1163	9.8667026	22
39	9.8309209	1372	10.1690791	9.9643346	2535	10.0356654	10.1334137	1163	9.8665863	21
40	9.8310580	1371	10.1689420	9.9645881	2535	10.0354119	10.1335301	1164	9.8664699	20
41	9.8311950	1370	10.1688050	9.9648416	2535	10.0351584	10.1336466	1165	9.8663534	19
42	9.8313320	1370	10.1686680	9.9650951	2535	10.0349049	10.1337631	1165	9.8662369	18
43	9.8314688	1368	10.1685312	9.9653486	2534	10.0346514	10.1338797	1166	9.8661203	17
44	9.8316056	1368	10.1683944	9.9656020	2535	10.0343980	10.1339964	1167	9.8660036	16
45	9.8317423	1367	10.1682577	9.9658555	2534	10.0341445	10.1341132	1168	9.8658868	15
46	9.8318789	1366	10.1681211	9.9661089	2534	10.0338911	10.1342300	1168	9.8657700	14
47	9.8320155	1366	10.1679845	9.9663623	2534	10.0336377	10.1343469	1169	9.8656531	13
48	9.8321519	1364	10.1678481	9.9666157	2534	10.0333843	10.1344638	1169	9.8655362	12
49	9.8322883	1364	10.1677117	9.9668692	2535	10.0331308	10.1345808	1170	9.8654192	11
50	9.8324246	1363	10.1675754	9.9671225	2533	10.0328775	10.1346979	1171	9.8653021	10
51	9.8325609	1363	10.1674391	9.9673759	2534	10.0326241	10.1348151	1172	9.8651849	9
52	9.8326970	1361	10.1673030	9.9676293	2534	10.0323707	10.1349323	1172	9.8650677	8
53	9.8328331	1361	10.1671669	9.9678827	2534	10.0321173	10.1350496	1173	9.8649504	7
54	9.8329691	1360	10.1670309	9.9681360	2533	10.0318640	10.1351669	1173	9.8648331	6
55	9.8331050	1359	10.1668950	9.9683893	2533	10.0316107	10.1352844	1175	9.8647156	5
56	9.8332408	1358	10.1667592	9.9686427	2534	10.0313573	10.1354019	1175	9.8645981	4
57	9.8333766	1358	10.1666234	9.9688960	2533	10.0311040	10.1355194	1175	9.8644806	3
58	9.8335122	1356	10.1664878	9.9691493	2533	10.0308507	10.1356371	1177	9.8643629	2
59	9.8336478	1356	10.1663522	9.9694026	2533	10.0305974	10.1357548	1177	9.8642452	1
60	9.8337833	1355	10.1662167	9.9696559	2533	10.0303441	10.1358725	1177	9.8641275	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
122°										47°

43°										136°
′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.8337833		10.1662167	9.9696559		10.0303441	10.1358725		9.8641275	60
1	9.8339188	1355	10.1660812	9.9699091	2532	10.0300909	10.1359904	1179	9.8640096	59
2	9.8340541	1353	10.1659459	9.9701624	2533	10.0298376	10.1361083	1179	9.8638917	58
3	9.8341894	1353	10.1658106	9.9704157	2533	10.0295843	10.1362263	1180	9.8637737	57
4	9.8343246	1352	10.1656754	9.9706689	2532	10.0293311	10.1363443	1180	9.8636557	56
5	9.8344597	1351	10.1655403	9.9709221	2532	10.0290779	10.1364624	1181	9.8635376	55
6	9.8345948	1351	10.1654052	9.9711754	2533	10.0288246	10.1365806	1182	9.8634194	54
7	9.8347297	1349	10.1652703	9.9714286	2532	10.0285714	10.1366989	1183	9.8633011	53
8	9.8348646	1349	10.1651354	9.9716818	2532	10.0283182	10.1368172	1183	9.8631828	52
9	9.8349994	1348	10.1650006	9.9719350	2532	10.0280650	10.1369356	1184	9.8630644	51
10	9.8351341	1347	10.1648659	9.9721882	2532	10.0278118	10.1370540	1184	9.8629460	50
11	9.8352688	1347	10.1647312	9.9724413	2531	10.0275587	10.1371726	1186	9.8628274	49
12	9.8354033	1345	10.1645967	9.9726945	2532	10.0273055	10.1372912	1186	9.8627088	48
13	9.8355378	1345	10.1644622	9.9729477	2532	10.0270523	10.1374098	1186	9.8625902	47
14	9.8356722	1344	10.1643278	9.9732008	2531	10.0267992	10.1375286	1188	9.8624714	46
15	9.8358066	1344	10.1641934	9.9734539	2531	10.0265461	10.1376474	1188	9.8623526	45
16	9.8359408	1342	10.1640592	9.9737071	2532	10.0262929	10.1377662	1188	9.8622338	44
17	9.8360750	1342	10.1639250	9.9739602	2531	10.0260398	10.1378852	1190	9.8621148	43
18	9.8362091	1341	10.1637909	9.9742133	2531	10.0257867	10.1380042	1190	9.8619958	42
19	9.8363431	1340	10.1636569	9.9744664	2531	10.0255336	10.1381233	1191	9.8618767	41
20	9.8364771	1340	10.1635229	9.9747195	2531	10.0252805	10.1382424	1191	9.8617576	40
21	9.8366109	1338	10.1633891	9.9749726	2531	10.0250274	10.1383617	1193	9.8616383	39
22	9.8367447	1338	10.1632553	9.9752257	2531	10.0247743	10.1384810	1193	9.8615190	38
23	9.8368784	1337	10.1631216	9.9754787	2530	10.0245213	10.1386003	1193	9.8613997	37
24	9.8370121	1337	10.1629879	9.9757318	2531	10.0242682	10.1387197	1194	9.8612803	36
25	9.8371456	1335	10.1628544	9.9759849	2531	10.0240151	10.1388392	1195	9.8611608	35
26	9.8372791	1335	10.1627209	9.9762379	2530	10.0237621	10.1389588	1196	9.8610412	34
27	9.8374125	1334	10.1625875	9.9764909	2530	10.0235091	10.1390785	1197	9.8609215	33
28	9.8375458	1333	10.1624542	9.9767440	2531	10.0232560	10.1391982	1197	9.8608018	32
29	9.8376790	1332	10.1623210	9.9769970	2530	10.0230030	10.1393179	1197	9.8606821	31
30	9.8378122	1332	10.1621878	9.9772500	2530	10.0227500	10.1394378	1199	9.8605622	30
31	9.8379453	1331	10.1620547	9.9775030	2530	10.0224970	10.1395577	1199	9.8604423	29
32	9.8380783	1330	10.1619217	9.9777560	2530	10.0222440	10.1396777	1200	9.8603223	28
33	9.8382112	1329	10.1617888	9.9780090	2530	10.0219910	10.1397978	1201	9.8602022	27
34	9.8383441	1329	10.1616559	9.9782620	2530	10.0217380	10.1399179	1201	9.8600821	26
35	9.8384769	1328	10.1615231	9.9785149	2529	10.0214851	10.1400381	1202	9.8599619	25
36	9.8386096	1327	10.1613904	9.9787679	2530	10.0212321	10.1401584	1203	9.8598416	24
37	9.8387422	1326	10.1612578	9.9790209	2530	10.0209791	10.1402787	1203	9.8597213	23
38	9.8388747	1325	10.1611253	9.9792738	2529	10.0207262	10.1403991	1204	9.8596009	22
39	9.8390072	1325	10.1609928	9.9795268	2530	10.0204732	10.1405196	1205	9.8594804	21
40	9.8391396	1324	10.1608604	9.9797797	2529	10.0202203	10.1406401	1205	9.8593599	20
41	9.8392719	1323	10.1607281	9.9800326	2529	10.0199674	10.1407607	1206	9.8592393	19
42	9.8394041	1322	10.1605959	9.9802856	2530	10.0197144	10.1408814	1207	9.8591186	18
43	9.8395363	1322	10.1604637	9.9805385	2529	10.0194615	10.1410022	1208	9.8589978	17
44	9.8396684	1321	10.1603316	9.9807914	2529	10.0192086	10.1411230	1208	9.8588770	16
45	9.8398004	1320	10.1601996	9.9810443	2529	10.0189557	10.1412439	1209	9.8587561	15
46	9.8399323	1319	10.1600677	9.9812972	2529	10.0187028	10.1413649	1210	9.8586351	14
47	9.8400642	1319	10.1599358	9.9815501	2529	10.0184499	10.1414859	1210	9.8585141	13
48	9.8401959	1317	10.1598041	9.9818030	2529	10.0181970	10.1416071	1212	9.8583929	12
49	9.8403276	1317	10.1596724	9.9820559	2528	10.0179441	10.1417282	1211	9.8582718	11
50	9.8404593	1317	10.1595407	9.9823087	2529	10.0176913	10.1418495	1213	9.8581505	10
51	9.8405908	1315	10.1594092	9.9825616	2529	10.0174384	10.1419708	1213	9.8580292	9
52	9.8407223	1315	10.1592777	9.9828145	2528	10.0171855	10.1420922	1214	9.8579078	8
53	9.8408537	1314	10.1591463	9.9830673	2529	10.0169327	10.1422137	1215	9.8577863	7
54	9.8409850	1313	10.1590150	9.9833202	2528	10.0166798	10.1423352	1215	9.8576648	6
55	9.8411162	1312	10.1588838	9.9835730	2529	10.0164270	10.1424568	1216	9.8575432	5
56	9.8412474	1312	10.1587526	9.9838259	2528	10.0161741	10.1425785	1217	9.8574215	4
57	9.8413785	1311	10.1586215	9.9840787	2528	10.0159213	10.1427002	1217	9.8572998	3
58	9.8415095	1310	10.1584905	9.9843315	2529	10.0156685	10.1428221	1219	9.8571779	2
59	9.8416404	1309	10.1583596	9.9845844	2528	10.0154156	10.1429439	1218	9.8570561	1
60	9.8417713	1309	10.1582287	9.9848372		10.0151628	10.1430659	1220	9.8569341	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′
133°										46°

44° 135°

′	Sine.	Dif.	Co-secant.	Tangent.	Dif.	Co-tangent.	Secant.	Dif.	Co-sine.	′
0	9.8417713	1308	10.1582287	9.9848372	2528	10.0151628	10.1430659	1220	9.8569341	60
1	9.8419021	1307	10.1580979	9.9850900	2528	10.0149100	10.1431879	1221	9.8568121	59
2	9.8420328	1306	10.1579672	9.9853428	2528	10.0146572	10.1433100	1222	9.8566900	58
3	9.8421634	1305	10.1578366	9.9855956	2528	10.0144044	10.1434322	1223	9.8565678	57
4	9.8422939	1305	10.1577061	9.9858484	2528	10.0141516	10.1435545	1223	9.8564455	56
5	9.8424244	1304	10.1575756	9.9861012	2528	10.0138988	10.1436768	1224	9.8563232	55
6	9.8425548	1303	10.1574452	9.9863540	2528	10.0136460	10.1437992	1224	9.8562008	54
7	9.8426851	1303	10.1573149	9.9866068	2528	10.0133932	10.1439216	1226	9.8560784	53
8	9.8428154	1302	10.1571846	9.9868596	2527	10.0131404	10.1440442	1226	9.8559558	52
9	9.8429456	1301	10.1570544	9.9871123	2528	10.0128877	10.1441668	1226	9.8558332	51
10	9.8430757	1300	10.1569243	9.9873651	2528	10.0126349	10.1442894	1228	9.8557106	50
11	9.8432057	1299	10.1567943	9.9876179	2527	10.0123821	10.1444122	1228	9.8555878	49
12	9.8433356	1299	10.1566644	9.9878706	2528	10.0121294	10.1445350	1229	9.8554650	48
13	9.8434655	1298	10.1565345	9.9881234	2527	10.0118766	10.1446579	1229	9.8553421	47
14	9.8435953	1297	10.1564047	9.9883761	2528	10.0116239	10.1447808	1231	9.8552192	46
15	9.8437250	1297	10.1562750	9.9886289	2527	10.0113711	10.1449039	1231	9.8550961	45
16	9.8438547	1295	10.1561453	9.9888816	2528	10.0111184	10.1450270	1231	9.8549730	44
17	9.8439842	1295	10.1560158	9.9891344	2528	10.0108656	10.1451501	1233	9.8548499	43
18	9.8441137	1295	10.1558863	9.9893871	2527	10.0106129	10.1452734	1233	9.8547266	42
19	9.8442432	1293	10.1557568	9.9896399	2528	10.0103601	10.1453967	1234	9.8546033	41
20	9.8443725	1293	10.1556275	9.9898926	2527	10.0101074	10.1455201	1235	9.8544799	40
21	9.8445018	1292	10.1554982	9.9901453	2527	10.0098547	10.1456436	1235	9.8543564	39
22	9.8446310	1291	10.1553690	9.9903981	2528	10.0096019	10.1457671	1236	9.8542329	38
23	9.8447601	1290	10.1552399	9.9906508	2527	10.0093492	10.1458907	1237	9.8541093	37
24	9.8448891	1290	10.1551109	9.9909035	2527	10.0090965	10.1460144	1237	9.8539856	36
25	9.8450181	1289	10.1549819	9.9911562	2527	10.0088438	10.1461381	1238	9.8538619	35
26	9.8451470	1288	10.1548530	9.9914089	2527	10.0085911	10.1462619	1239	9.8537381	34
27	9.8452758	1287	10.1547242	9.9916616	2527	10.0083384	10.1463858	1240	9.8536142	33
28	9.8454045	1287	10.1545955	9.9919143	2527	10.0080857	10.1465098	1240	9.8534902	32
29	9.8455332	1286	10.1544668	9.9921670	2527	10.0078330	10.1466338	1241	9.8533662	31
30	9.8456618	1285	10.1543382	9.9924197	2527	10.0075803	10.1467579	1242	9.8532421	30
31	9.8457903	1285	10.1542097	9.9926724	2527	10.0073276	10.1468821	1243	9.8531179	29
32	9.8459188	1283	10.1540812	9.9929251	2527	10.0070749	10.1470064	1243	9.8529936	28
33	9.8460471	1283	10.1539529	9.9931778	2527	10.0068222	10.1471307	1244	9.8528693	27
34	9.8461754	1282	10.1538246	9.9934305	2527	10.0065695	10.1472551	1245	9.8527449	26
35	9.8463036	1282	10.1536964	9.9936832	2527	10.0063168	10.1473796	1245	9.8526204	25
36	9.8464318	1281	10.1535682	9.9939359	2527	10.0060641	10.1475041	1246	9.8524959	24
37	9.8465599	1280	10.1534401	9.9941886	2527	10.0058114	10.1476287	1247	9.8523713	23
38	9.8466879	1279	10.1533121	9.9944413	2527	10.0055587	10.1477534	1248	9.8522466	22
39	9.8468158	1278	10.1531842	9.9946940	2526	10.0053060	10.1478782	1248	9.8521218	21
40	9.8469436	1278	10.1530564	9.9949466	2527	10.0050534	10.1480030	1249	9.8519970	20
41	9.8470714	1277	10.1529286	9.9951993	2527	10.0048007	10.1481279	1250	9.8518721	19
42	9.8471991	1276	10.1528009	9.9954520	2527	10.0045480	10.1482529	1251	9.8517471	18
43	9.8473267	1276	10.1526733	9.9957047	2526	10.0042953	10.1483780	1251	9.8516220	17
44	9.8474543	1274	10.1525457	9.9959573	2527	10.0040427	10.1485031	1252	9.8514969	16
45	9.8475817	1274	10.1524183	9.9962100	2527	10.0037900	10.1486283	1252	9.8513717	15
46	9.8477091	1274	10.1522909	9.9964627	2527	10.0035373	10.1487535	1254	9.8512465	14
47	9.8478365	1272	10.1521635	9.9967154	2526	10.0032846	10.1488788	1254	9.8511211	13
48	9.8479637	1272	10.1520363	9.9969680	2527	10.0030320	10.1490043	1255	9.8509957	12
49	9.8480909	1271	10.1519091	9.9972207	2527	10.0027793	10.1491298	1256	9.8508702	11
50	9.8482180	1270	10.1517820	9.9974734	2526	10.0025266	10.1492554	1256	9.8507446	10
51	9.8483450	1270	10.1516550	9.9977260	2527	10.0022740	10.1493810	1257	9.8506190	9
52	9.8484720	1269	10.1515280	9.9979787	2527	10.0020213	10.1495067	1258	9.8504933	8
53	9.8485989	1268	10.1514011	9.9982314	2526	10.0017686	10.1496325	1258	9.8503675	7
54	9.8487257	1267	10.1512743	9.9984840	2527	10.0015160	10.1497583	1260	9.8502417	6
55	9.8488524	1267	10.1511476	9.9987367	2526	10.0012633	10.1498843	1260	9.8501157	5
56	9.8489791	1266	10.1510209	9.9989893	2527	10.0010107	10.1500103	1262	9.8499897	4
57	9.8491057	1265	10.1508943	9.9992420	2527	10.0007580	10.1501363	1262	9.8498637	3
58	9.8492322	1264	10.1507678	9.9994947	2526	10.0005053	10.1502625	1263	9.8497375	2
59	9.8493586	1264	10.1506414	9.9997473	2527	10.0002527	10.1503887		9.8496113	1
60	9.8494850		10.1505150	10.0000000		10.0000000	10.1505150		9.8494850	0
′	Co-sine.	Dif.	Secant.	Co-tang.	Dif.	Tangent.	Co-secant.	Dif.	Sine.	′

134° 45°

NATURAL SINES.

	0°		1°		2°		3°		4°		
′	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	′
0	0000000	1.0000000	0174524	9998477	0348995	9993908	0523360	9986295	0697565	9975641	60
1	0002909	1.0000000	0177432	9998426	0351902	9993806	0526264	9986143	0700467	9975437	59
2	0005818	9999998	0180341	9998374	0354809	9993704	0529169	9985989	0703368	9975233	58
3	0008727	9999996	0183249	9998321	0357716	9993600	0532074	9985835	0706270	9975028	57
4	0011636	9999993	0186158	9998267	0360623	9993495	0534979	9985680	0709171	9974822	56
5	0014544	9999989	0189066	9998213	0363530	9993390	0537883	9985524	0712073	9974615	55
6	0017453	9999985	0191974	9998157	0366437	9993284	0540788	9985367	0714974	9974408	54
7	0020362	9999979	0194883	9998101	0369344	9993177	0543693	9985209	0717876	9974199	53
8	0023271	9999973	0197791	9998044	0372251	9993069	0546597	9985050	0720777	9973990	52
9	0026180	9999966	0200699	9997986	0375158	9992960	0549502	9984891	0723678	9973780	51
10	0029089	9999958	0203608	9997927	0378065	9992851	0552406	9984731	0726580	9973569	50
11	0031998	9999949	0206516	9997867	0380971	9992740	0555311	9984570	0729481	9973357	49
12	0034907	9999939	0209424	9997807	0383878	9992629	0558215	9984408	0732382	9973145	48
13	0037815	9999928	0212332	9997745	0386785	9992517	0561119	9984245	0735283	9972931	47
14	0040724	9999917	0215241	9997683	0389692	9992404	0564024	9984081	0738184	9972717	46
15	0043633	9999905	0218149	9997620	0392598	9992290	0566928	9983917	0741085	9972502	45
16	0046542	9999892	0221057	9997556	0395505	9992176	0569832	9983751	0743986	9972286	44
17	0049451	9999878	0223965	9997492	0398411	9992060	0572736	9983585	0746887	9972069	43
18	0052360	9999863	0226873	9997426	0401318	9991944	0575640	9983418	0749787	9971851	42
19	0055268	9999847	0229781	9997360	0404224	9991827	0578544	9983250	0752688	9971633	41
20	0058177	9999831	0232690	9997292	0407131	9991709	0581448	9983082	0755589	9971413	40
21	0061086	9999813	0235598	9997224	0410037	9991590	0584352	9982912	0758489	9971193	39
22	0063995	9999795	0238506	9997156	0412944	9991470	0587256	9982742	0761390	9970972	38
23	0066904	9999776	0241414	9997086	0415850	9991350	0590160	9982570	0764290	9970750	37
24	0069813	9999756	0244322	9997015	0418757	9991228	0593064	9982398	0767190	9970528	36
25	0072721	9999736	0247230	9996943	0421663	9991106	0595967	9982225	0770091	9970304	35
26	0075630	9999714	0250138	9996871	0424569	9990983	0598871	9982052	0772991	9970080	34
27	0078539	9999692	0253046	9996798	0427475	9990859	0601775	9981877	0775891	9969854	33
28	0081448	9999668	0255954	9996724	0430382	9990734	0604678	9981701	0778791	9969628	32
29	0084357	9999644	0258862	9996649	0433288	9990609	0607582	9981525	0781691	9969401	31
30	0087265	9999619	0261769	9996573	0436194	9990482	0610485	9981348	0784591	9969173	30
31	0090174	9999593	0264677	9996497	0439100	9990355	0613389	9981170	0787491	9968945	29
32	0093083	9999567	0267585	9996419	0442006	9990227	0616292	9980991	0790391	9968715	28
33	0095992	9999539	0270493	9996341	0444912	9990098	0619196	9980811	0793290	9968485	27
34	0098900	9999511	0273401	9996262	0447818	9989968	0622099	9980631	0796190	9968254	26
35	0101809	9999482	0276309	9996182	0450724	9989837	0625002	9980450	0799090	9968022	25
36	0104718	9999452	0279216	9996101	0453630	9989706	0627905	9980267	0801989	9967789	24
37	0107627	9999421	0282124	9996020	0456536	9989573	0630808	9980084	0804889	9967555	23
38	0110535	9999389	0285032	9995937	0459442	9989440	0633711	9979900	0807788	9967321	22
39	0113444	9999357	0287940	9995854	0462347	9989306	0636614	9979716	0810687	9967085	21
40	0116353	9999323	0290847	9995770	0465253	9989171	0639517	9979530	0813587	9966849	20
41	0119261	9999289	0293755	9995684	0468159	9989035	0642420	9979343	0816486	9966612	19
42	0122170	9999254	0296662	9995599	0471065	9988899	0645323	9979156	0819385	9966374	18
43	0125079	9999218	0299570	9995512	0473970	9988761	0648226	9978968	0822284	9966135	17
44	0127987	9999181	0302478	9995424	0476876	9988623	0651129	9978779	0825183	9965895	16
45	0130896	9999143	0305385	9995336	0479781	9988484	0654031	9978589	0828082	9965655	15
46	0133805	9999105	0308293	9995247	0482687	9988344	0656934	9978399	0830981	9965414	14
47	0136713	9999065	0311200	9995157	0485592	9988203	0659836	9978207	0833880	9965172	13
48	0139622	9999025	0314108	9995066	0488498	9988061	0662739	9978015	0836778	9964929	12
49	0142530	9998984	0317015	9994974	0491403	9987919	0665641	9977821	0839677	9964685	11
50	0145439	9998942	0319922	9994881	0494308	9987775	0668544	9977627	0842576	9964440	10
51	0148348	9998900	0322830	9994788	0497214	9987631	0671446	9977433	0845474	9964195	9
52	0151256	9998856	0325737	9994693	0500119	9987486	0674349	9977237	0848373	9963948	8
53	0154165	9998812	0328644	9994598	0503024	9987340	0677251	9977040	0851271	9963701	7
54	0157073	9998766	0331552	9994502	0505929	9987194	0680153	9976843	0854169	9963453	6
55	0159982	9998720	0334459	9994405	0508835	9987046	0683055	9976645	0857067	9963204	5
56	0162890	9998673	0337366	9994308	0511740	9986898	0685957	9976445	0859966	9962954	4
57	0165799	9998625	0340274	9994209	0514645	9986748	0688859	9976245	0862864	9962704	3
58	0168707	9998577	0343181	9994110	0517550	9986598	0691761	9976045	0865762	9962452	2
59	0171616	9998527	0346088	9994009	0520455	9986447	0694663	9975843	0868660	9962200	1
60	0174524	9998477	0348995	9993908	0523360	9986295	0697565	9975641	0871557	9961947	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	89°		88°		87°		86°		85°		

NATURAL SINES.

′	5°		6°		7°		8°		9°		′
	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	
0	0871557	9961947	1045285	9945219	1218693	9925462	1391731	9902681	1564345	9876883	60
1	0874455	9961693	1048178	9944914	1221581	9925107	1394612	9902276	1567218	9876428	59
2	0877353	9961438	1051070	9944609	1224468	9924751	1397492	9901869	1570091	9875972	58
3	0880251	9961183	1053963	9944303	1227355	9924394	1400372	9901462	1572963	9875514	57
4	0883148	9960926	1056856	9943996	1230241	9924037	1403252	9901055	1575836	9875057	56
5	0886046	9960669	1059748	9943688	1233128	9923679	1406132	9900646	1578708	9874598	55
6	0888943	9960411	1062641	9943379	1236015	9923319	1409012	9900237	1581581	9874138	54
7	0891840	9960152	1065533	9943070	1238901	9922959	1411892	9899826	1584453	9873678	53
8	0894738	9959892	1068425	9942760	1241788	9922599	1414772	9899415	1587325	9873216	52
9	0897635	9959631	1071318	9942448	1244674	9922237	1417651	9899003	1590197	9872754	51
10	0900532	9959370	1074210	9942136	1247560	9921874	1420531	9898590	1593069	9872291	50
11	0903429	9959107	1077102	9941823	1250446	9921511	1423410	9898177	1595940	9871827	49
12	0906326	9958844	1079994	9941510	1253332	9921147	1426289	9897762	1598812	9871363	48
13	0909223	9958580	1082885	9941195	1256218	9920782	1429168	9897347	1601683	9870897	47
14	0912119	9958315	1085777	9940880	1259104	9920416	1432047	9896931	1604555	9870431	46
15	0915016	9958049	1088669	9940563	1261990	9920049	1434926	9896514	1607426	9869964	45
16	0917913	9957783	1091560	9940246	1264875	9919682	1437805	9896096	1610297	9869496	44
17	0920809	9957515	1094452	9939928	1267761	9919314	1440684	9895677	1613167	9869027	43
18	0923706	9957247	1097343	9939610	1270646	9918944	1443562	9895258	1616038	9868557	42
19	0926602	9956978	1100234	9939290	1273531	9918574	1446440	9894838	1618909	9868087	41
20	0929499	9956708	1103126	9938969	1276416	9918204	1449319	9894416	1621779	9867615	40
21	0932395	9956437	1106017	9938648	1279302	9917832	1452197	9893994	1624650	9867143	39
22	0935291	9956165	1108908	9938326	1282186	9917459	1455075	9893572	1627520	9866670	38
23	0938187	9955893	1111799	9938003	1285071	9917086	1457953	9893148	1630390	9866196	37
24	0941083	9955620	1114689	9937679	1287956	9916712	1460830	9892723	1633260	9865722	36
25	0943979	9955345	1117580	9937355	1290841	9916337	1463708	9892298	1636129	9865246	35
26	0946875	9955070	1120471	9937029	1293725	9915961	1466585	9891872	1638999	9864770	34
27	0949771	9954795	1123361	9936703	1296609	9915584	1469463	9891445	1641868	9864293	33
28	0952666	9954518	1126252	9936375	1299494	9915206	1472340	9891017	1644738	9863815	32
29	0955562	9954240	1129142	9936047	1302378	9914828	1475217	9890588	1647607	9863336	31
30	0958458	9953962	1132032	9935719	1305262	9914449	1478094	9890159	1650476	9862856	30
31	0961353	9953683	1134922	9935389	1308146	9914069	1480971	9889728	1653345	9862375	29
32	0964248	9953403	1137812	9935058	1311030	9913688	1483848	9889297	1656214	9861894	28
33	0967144	9953122	1140702	9934727	1313913	9913306	1486724	9888865	1659082	9861412	27
34	0970039	9952840	1143592	9934395	1316797	9912923	1489601	9888432	1661951	9860929	26
35	0972934	9952557	1146482	9934062	1319681	9912540	1492477	9887998	1664819	9860445	25
36	0975829	9952274	1149372	9933728	1322564	9912155	1495353	9887564	1667687	9859960	24
37	0978724	9951990	1152261	9933393	1325447	9911770	1498230	9887128	1670556	9859475	23
38	0981619	9951705	1155151	9933057	1328330	9911384	1501106	9886692	1673423	9858988	22
39	0984514	9951419	1158040	9932721	1331213	9910997	1503981	9886255	1676291	9858501	21
40	0987408	9951132	1160929	9932384	1334096	9910610	1506857	9885817	1679159	9858013	20
41	0990303	9950844	1163818	9932045	1336979	9910221	1509733	9885378	1682026	9857524	19
42	0993197	9950556	1166707	9931706	1339862	9909832	1512608	9884939	1684894	9857035	18
43	0996092	9950266	1169596	9931367	1342744	9909442	1515484	9884498	1687761	9856544	17
44	0998986	9949976	1172485	9931026	1345627	9909051	1518359	9884057	1690628	9856053	16
45	1001881	9949685	1175374	9930685	1348509	9908659	1521234	9883615	1693495	9855561	15
46	1004775	9949393	1178263	9930342	1351392	9908266	1524109	9883172	1696362	9855068	14
47	1007669	9949101	1181151	9929999	1354274	9907873	1526984	9882728	1699228	9854574	13
48	1010563	9948807	1184040	9929655	1357156	9907478	1529858	9882284	1702095	9854079	12
49	1013457	9948513	1186928	9929310	1360038	9907083	1532733	9881838	1704961	9853583	11
50	1016351	9948217	1189816	9928965	1362919	9906687	1535607	9881392	1707828	9853087	10
51	1019245	9947921	1192704	9928618	1365801	9906290	1538482	9880945	1710694	9852590	9
52	1022138	9947625	1195593	9928271	1368683	9905893	1541356	9880497	1713560	9852092	8
53	1025032	9947327	1198481	9927922	1371564	9905494	1544230	9880048	1716425	9851593	7
54	1027925	9947028	1201368	9927573	1374445	9905095	1547104	9879599	1719291	9851093	6
55	1030819	9946729	1204256	9927224	1377327	9904694	1549978	9879148	1722156	9850593	5
56	1033712	9946428	1207144	9926873	1380208	9904293	1552851	9878697	1725022	9850091	4
57	1036605	9946127	1210031	9926521	1383089	9903891	1555725	9878245	1727887	9849589	3
58	1039499	9945825	1212919	9926169	1385970	9903489	1558598	9877792	1730752	9849086	2
59	1042392	9945523	1215806	9925816	1388850	9903085	1561472	9877338	1733617	9848582	1
60	1045285	9945219	1218693	9925462	1391731	9902681	1564345	9876883	1736482	9848078	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	84°		83°		82°		81°		80°		

NATURAL SINES.

′	10°		11°		12°		13°		14°		′
	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	
0	1736482	9848078	1908090	9816272	2079117	9781476	2249511	9743701	2419219	9702957	60
1	1739346	9847572	1910945	9815716	2081962	9780871	2252345	9743046	2422041	9702353	59
2	1742211	9847066	1913801	9815160	2084807	9780265	2255179	9742390	2424863	9701748	58
3	1745075	9846558	1916656	9814603	2087652	9779658	2258013	9741734	2427685	9701142	57
4	1747939	9846050	1919510	9814045	2090497	9779050	2260846	9741077	2430507	9700536	56
5	1750803	9845542	1922365	9813486	2093341	9778442	2263680	9740419	2433329	9699928	55
6	1753667	9845032	1925220	9812927	2096186	9777832	2266513	9739760	2436150	9699320	54
7	1756531	9844521	1928074	9812366	2099030	9777222	2269346	9739100	2438971	9698711	53
8	1759395	9844010	1930928	9811805	2101874	9776611	2272179	9738439	2441792	9698101	52
9	1762258	9843498	1933782	9811243	2104718	9775999	2275012	9737778	2444613	9697491	51
10	1765121	9842985	1936636	9810680	2107561	9775387	2277844	9737116	2447433	9696879	50
11	1767984	9842471	1939490	9810116	2110405	9774773	2280677	9736453	2450254	9696267	49
12	1770847	9841956	1942344	9809552	2113248	9774159	2283509	9735789	2453074	9695653	48
13	1773710	9841441	1945197	9808986	2116091	9773544	2286341	9735124	2455894	9695040	47
14	1776573	9840924	1948050	9808420	2118934	9772928	2289172	9734459	2458713	9694425	46
15	1779435	9840407	1950903	9807853	2121777	9772311	2292004	9733793	2461533	9693809	45
16	1782298	9839889	1953756	9807285	2124619	9771693	2294835	9733125	2464352	9693193	44
17	1785160	9839370	1956609	9806716	2127462	9771075	2297666	9732458	2467171	9692575	43
18	1788022	9838850	1959461	9806147	2130304	9770456	2300497	9731789	2469990	9691957	42
19	1790884	9838330	1962314	9805576	2133145	9769836	2303328	9731119	2472809	9691338	41
20	1793746	9837808	1965166	9805005	2135988	9769215	2306159	9730449	2475627	9690719	40
21	1796607	9837286	1968018	9804433	2138829	9768593	2308989	9729777	2478445	9690098	39
22	1799469	9836763	1970870	9803860	2141671	9767970	2311819	9729105	2481263	9689477	38
23	1802330	9836239	1973722	9803286	2144512	9767347	2314649	9728432	2484081	9688855	37
24	1805191	9835715	1976573	9802712	2147353	9766723	2317479	9727759	2486899	9688232	36
25	1808052	9835189	1979425	9802136	2150194	9766098	2320309	9727084	2489716	9687608	35
26	1810913	9834663	1982276	9801560	2153035	9765472	2323138	9726409	2492533	9686983	34
27	1813774	9834136	1985127	9800983	2155876	9764845	2325967	9725733	2495350	9686358	33
28	1816635	9833608	1987978	9800405	2158716	9764218	2328796	9725056	2498167	9685731	32
29	1819495	9833079	1990829	9799827	2161556	9763589	2331625	9724378	2500984	9685104	31
30	1822355	9832549	1993679	9799247	2164396	9762960	2334454	9723699	2503800	9684476	30
31	1825215	9832019	1996530	9798667	2167236	9762330	2337282	9723020	2506616	9683848	29
32	1828075	9831487	1999380	9798086	2170076	9761699	2340110	9722339	2509432	9683218	28
33	1830935	9830955	2002230	9797504	2172915	9761068	2342938	9721658	2512248	9682588	27
34	1833795	9830422	2005080	9796921	2175754	9760435	2345766	9720976	2515063	9681957	26
35	1836654	9829888	2007930	9796337	2178593	9759802	2348594	9720294	2517879	9677325	25
36	1839514	9829353	2010779	9795752	2181432	9759168	2351421	9719610	2520694	9677092	24
37	1842373	9828818	2013629	9795167	2184271	9758533	2354248	9718926	2523508	9676458	23
38	1845232	9828282	2016478	9794581	2187110	9757897	2357075	9718240	2526323	9675824	22
39	1848091	9827744	2019327	9793994	2189948	9757260	2359902	9717554	2529137	9674188	21
40	1850949	9827206	2022176	9793406	2192786	9756623	2362729	9716867	2531952	9674552	20
41	1853808	9826668	2025024	9792818	2195624	9755985	2365555	9716180	2534766	9673915	19
42	1856666	9826128	2027873	9792228	2198462	9755345	2368381	9715491	2537579	9672678	18
43	1859524	9825587	2030721	9791638	2201300	9754706	2371207	9714802	2540393	9671939	17
44	1862382	9825046	2033569	9791047	2204137	9754065	2374033	9714112	2543206	9671200	16
45	1865240	9824504	2036418	9790455	2206974	9753423	2376859	9713421	2546019	9670459	15
46	1868098	9823961	2039265	9789862	2209811	9752781	2379684	9712729	2548832	9669718	14
47	1870956	9823417	2042113	9789268	2212648	9752138	2382510	9712036	2551645	9668977	13
48	1873813	9822873	2044961	9788674	2215485	9751494	2385335	9711343	2554458	9668234	12
49	1876670	9822327	2047808	9788079	2218321	9750849	2388159	9710649	2557270	9667490	11
50	1879528	9821781	2050655	9787483	2221158	9750203	2390984	9709953	2560082	9666746	10
51	1882385	9821234	2053502	9786886	2223994	9749556	2393808	9709258	2562894	9666001	9
52	1885241	9820686	2056349	9786288	2226830	9748909	2396633	9708561	2565705	9665255	8
53	1888098	9820137	2059195	9785689	2229666	9748261	2399457	9707863	2568517	9664508	7
54	1890954	9819587	2062042	9785090	2232501	9747612	2402280	9707165	2571328	9663761	6
55	1893811	9819037	2064888	9784490	2235337	9746962	2405104	9706466	2574139	9663012	5
56	1896667	9818485	2067734	9783889	2238172	9746311	2407927	9705766	2576950	9662263	4
57	1899523	9817933	2070580	9783287	2241007	9745660	2410751	9705065	2579760	9661513	3
58	1902379	9817380	2073426	9782684	2243842	9745008	2413574	9704363	2582570	9660762	2
59	1905234	9816826	2076272	9782080	2246676	9744355	2416396	9703661	2585381	9660011	1
60	1908090	9816272	2079117	9781476	2249511	9743701	2419219	9702957	2588190	9659258	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	79°		78°		77°		76°		75°		

NATURAL SINES.

′	15°		16°		17°		18°		19°		′
	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	
0	2588190	9659258	2756374	9612617	2923717	9563048	3090170	9510565	3255682	9455186	60
1	2591000	9658505	2759170	9611815	2926499	9562197	3092936	9509666	3258432	9454238	59
2	2593810	9657751	2761965	9611012	2929280	9561345	3095702	9508766	3261182	9453290	58
3	2596619	9656996	2764761	9610208	2932061	9560492	3098468	9507865	3263932	9452341	57
4	2599428	9656240	2767556	9609403	2934842	9559639	3101234	9506963	3266681	9451391	56
5	2602237	9655484	2770352	9608598	2937623	9558785	3103999	9506061	3269430	9450441	55
6	2605045	9654726	2773147	9607792	2940403	9557930	3106764	9505157	3272179	9449489	54
7	2607853	9653968	2775941	9606984	2943183	9557074	3109529	9504253	3274928	9448537	53
8	2610662	9653209	2778736	9606177	2945963	9556218	3112294	9503348	3277676	9447584	52
9	2613469	9652449	2781530	9605368	2948743	9555361	3115058	9502443	3280424	9446630	51
10	2616277	9651689	2784324	9604558	2951522	9554502	3117822	9501536	3283172	9445675	50
11	2619085	9650927	2787118	9603748	2954302	9553643	3120586	9500629	3285919	9444720	49
12	2621892	9650165	2789911	9602937	2957081	9552784	3123349	9499721	3288666	9443764	48
13	2624699	9649402	2792704	9602125	2959859	9551923	3126112	9498812	3291413	9442807	47
14	2627506	9648638	2795497	9601312	2962638	9551062	3128875	9497902	3294160	9441849	46
15	2630312	9647873	2798290	9600499	2965416	9550199	3131638	9496991	3296906	9440890	45
16	2633118	9647108	2801083	9599684	2968194	9549336	3134400	9496080	3299653	9439931	44
17	2635925	9646341	2803875	9598869	2970971	9548473	3137163	9495168	3302398	9438971	43
18	2638730	9645574	2806667	9598053	2973749	9547608	3139925	9494255	3305144	9438010	42
19	2641536	9644806	2809459	9597236	2976526	9546743	3142686	9493341	3307889	9437048	41
20	2644342	9644037	2812251	9596418	2979303	9545876	3145448	9492426	3310634	9436085	40
21	2647147	9643268	2815042	9595600	2982079	9545009	3148209	9491511	3313379	9435122	39
22	2649952	9642497	2817833	9594781	2984856	9544141	3150969	9490595	3316123	9434157	38
23	2652757	9641726	2820624	9593961	2987632	9543273	3153730	9489678	3318867	9433192	37
24	2655561	9640954	2823415	9593140	2990408	9542403	3156490	9488760	3321611	9432227	36
25	2658366	9640181	2826205	9592318	2993184	9541533	3159250	9487842	3324355	9431260	35
26	2661170	9639407	2828995	9591496	2995959	9540662	3162010	9486922	3327098	9430293	34
27	2663973	9638633	2831785	9590672	2998734	9539790	3164770	9486002	3329841	9429324	33
28	2666777	9637858	2834575	9589848	3001509	9538917	3167529	9485081	3332584	9428355	32
29	2669581	9637081	2837364	9589023	3004284	9538044	3170288	9484159	3335326	9427386	31
30	2672384	9636305	2840153	9588197	3007058	9537170	3173047	9483237	3338069	9426415	30
31	2675187	9635527	2842942	9587371	3009832	9536294	3175805	9482313	3340810	9425444	29
32	2677989	9634748	2845731	9586543	3012606	9535418	3178563	9481389	3343552	9424471	28
33	2680792	9633969	2848520	9585715	3015380	9534542	3181321	9480464	3346293	9423498	27
34	2683594	9633189	2851308	9584886	3018153	9533664	3184079	9479538	3349034	9422525	26
35	2686396	9632408	2854096	9584056	3020926	9532786	3186836	9478612	3351775	9421550	25
36	2689198	9631626	2856884	9583226	3023699	9531907	3189593	9477684	3354516	9420575	24
37	2692000	9630843	2859671	9582394	3026471	9531027	3192350	9476756	3357256	9419598	23
38	2694801	9630060	2862458	9581562	3029244	9530146	3195106	9475827	3359996	9418621	22
39	2697602	9629275	2865246	9580729	3032016	9529264	3197863	9474897	3362735	9417644	21
40	2700403	9628490	2868032	9579895	3034788	9528382	3200619	9473966	3365475	9416665	20
41	2703204	9627704	2870819	9579060	3037559	9527499	3203374	9473035	3368214	9415686	19
42	2706004	9626917	2873605	9578225	3040331	9526615	3206130	9472103	3370953	9414705	18
43	2708805	9626130	2876391	9577389	3043102	9525730	3208885	9471170	3373691	9413724	17
44	2711605	9625342	2879177	9576552	3045872	9524844	3211640	9470236	3376429	9412743	16
45	2714404	9624552	2881963	9575714	3048643	9523958	3214395	9469301	3379167	9411760	15
46	2717204	9623762	2884748	9574875	3051413	9523071	3217149	9468366	3381905	9410777	14
47	2720003	9622972	2887533	9574035	3054183	9522183	3219903	9467430	3384642	9409793	13
48	2722802	9622180	2890318	9573195	3056953	9521294	3222657	9466493	3387379	9408808	12
49	2725601	9621387	2893103	9572354	3059723	9520404	3225411	9465555	3390116	9407822	11
50	2728400	9620594	2895887	9571512	3062492	9519514	3228164	9464616	3392852	9406835	10
51	2731198	9619800	2898671	9570669	3065261	9518623	3230917	9463677	3395589	9405848	9
52	2733997	9619005	2901455	9569825	3068030	9517731	3233670	9462736	3398325	9404860	8
53	2736794	9618210	2904239	9568981	3070798	9516838	3236422	9461795	3401060	9403871	7
54	2739592	9617413	2907022	9568136	3073566	9515944	3239174	9460854	3403796	9402881	6
55	2742390	9616616	2909805	9567290	3076334	9515050	3241926	9459911	3406531	9401891	5
56	2745187	9615818	2912588	9566443	3079102	9514154	3244678	9458968	3409265	9400899	4
57	2747984	9615019	2915371	9565595	3081869	9513258	3247429	9458023	3412000	9399907	3
58	2750781	9614219	2918153	9564747	3084636	9512361	3250180	9457078	3414734	9398914	2
59	2753577	9613418	2920935	9563898	3087403	9511464	3252931	9456132	3417468	9397921	1
60	2756374	9612617	2923717	9563048	3090170	9510565	3255682	9455186	3420201	9396926	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	74°		73°		72°		71°		70°		

NATURAL SINES.

	20°		21°		22°		23°		24°		
′	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	′
0	3420201	9396926	3583679	9335804	3746066	9271839	3907311	9205049	4067366	9135455	60
1	3422935	9395931	3586395	9334761	3748763	9270748	3909989	9203912	4070024	9134271	59
2	3425668	9394935	3589110	9333718	3751459	9269658	3912666	9202774	4072681	9133087	58
3	3428400	9393938	3591825	9332673	3754156	9268566	3915343	9201635	4075337	9131902	57
4	3431133	9392940	3594540	9331628	3756852	9267474	3918019	9200496	4077993	9130716	56
5	3433865	9391942	3597254	9330582	3759547	9266380	3920695	9199356	4080649	9129529	55
6	3436597	9390943	3599968	9329535	3762243	9265286	3923371	9198215	4083305	9128342	54
7	3439329	9389943	3602682	9328488	3764938	9264192	3926047	9197073	4085960	9127154	53
8	3442060	9388942	3605395	9327439	3767632	9263096	3928722	9195931	4088615	9125965	52
9	3444791	9387940	3608108	9326390	3770327	9262000	3931397	9194788	4091269	9124775	51
10	3447521	9386938	3610821	9325340	3773021	9260902	3934071	9193644	4093923	9123584	50
11	3450252	9385934	3613534	9324290	3775714	9259805	3936745	9192499	4096577	9122393	49
12	3452982	9384930	3616246	9323238	3778408	9258706	3939419	9191353	4099230	9121201	48
13	3455712	9383925	3618958	9322186	3781101	9257606	3942093	9190207	4101883	9120008	47
14	3458441	9382920	3621669	9321133	3783794	9256506	3944766	9189060	4104536	9118815	46
15	3461171	9381913	3624380	9320079	3786486	9255405	3947439	9187912	4107189	9117620	45
16	3463900	9380906	3627091	9319024	3789178	9254303	3950111	9186763	4109841	9116425	44
17	3466628	9379898	3629802	9317969	3791870	9253201	3952783	9185614	4112492	9115229	43
18	3469357	9378889	3632512	9316912	3794562	9252097	3955455	9184464	4115144	9114033	42
19	3472085	9377880	3635222	9315855	3797253	9250993	3958127	9183313	4117795	9112835	41
20	3474812	9376869	3637932	9314797	3799944	9249888	3960798	9182161	4120445	9111637	40
21	3477540	9375858	3640641	9313739	3802634	9248782	3963468	9181009	4123096	9110438	39
22	3480267	9374846	3643351	9312679	3805324	9247676	3966139	9179855	4125745	9109238	38
23	3482994	9373833	3646059	9311619	3808014	9246568	3968809	9178701	4128395	9108038	37
24	3485720	9372820	3648768	9310558	3810704	9245460	3971479	9177546	4131044	9106837	36
25	3488447	9371806	3651476	9309496	3813393	9244351	3974148	9176391	4133693	9105635	35
26	3491173	9370790	3654184	9308434	3816082	9243242	3976818	9175234	4136342	9104432	34
27	3493898	9369774	3656891	9307370	3818770	9242131	3979486	9174077	4138990	9103228	33
28	3496624	9368758	3659599	9306306	3821459	9241020	3982155	9172919	4141638	9102024	32
29	3499349	9367740	3662306	9305241	3824147	9239908	3984823	9171760	4144285	9100819	31
30	3502074	9366722	3665012	9304176	3826834	9238795	3987491	9170601	4146932	9099613	30
31	3504798	9365703	3667719	9303109	3829522	9237682	3990158	9169440	4149579	9098406	29
32	3507523	9364683	3670425	9302042	3832209	9236567	3992825	9168279	4152226	9097199	28
33	3510246	9363662	3673130	9300974	3834895	9235452	3995492	9167118	4154872	9095990	27
34	3512970	9362641	3675836	9299905	3837582	9234336	3998158	9165955	4157517	9094781	26
35	3515693	9361618	3678541	9298835	3840268	9233220	4000825	9164791	4160163	9093572	25
36	3518416	9360595	3681246	9297765	3842953	9232102	4003490	9163627	4162808	9092361	24
37	3521139	9359571	3683950	9296694	3845639	9230984	4006156	9162462	4165453	9091150	23
38	3523862	9358547	3686654	9295622	3848324	9229865	4008821	9161297	4168097	9089938	22
39	3526584	9357521	3689358	9294549	3851008	9228745	4011485	9160130	4170741	9088725	21
40	3529306	9356495	3692061	9293475	3853693	9227624	4014150	9158963	4173385	9087511	20
41	3532027	9355468	3694765	9292401	3856377	9226503	4016814	9157795	4176028	9086297	19
42	3534748	9354440	3697468	9291326	3859060	9225381	4019478	9156626	4178671	9085082	18
43	3537469	9353412	3700170	9290250	3861744	9224258	4022141	9155456	4181313	9083866	17
44	3540190	9352382	3702872	9289173	3864427	9223134	4024804	9154286	4183956	9082649	16
45	3542910	9351352	3705574	9288096	3867110	9222010	4027467	9153115	4186597	9081432	15
46	3545630	9350321	3708276	9287017	3869792	9220884	4030129	9151943	4189239	9080214	14
47	3548350	9349289	3710977	9285938	3872474	9219758	4032791	9150770	4191880	9078995	13
48	3551070	9348257	3713678	9284858	3875156	9218632	4035453	9149597	4194521	9077775	12
49	3553789	9347223	3716379	9283778	3877837	9217504	4038114	9148422	4197161	9076554	11
50	3556508	9346189	3719079	9282696	3880518	9216375	4040775	9147247	4199801	9075333	10
51	3559226	9345154	3721780	9281614	3883199	9215246	4043436	9146072	4202441	9074111	9
52	3561944	9344119	3724479	9280531	3885880	9214116	4046096	9144895	4205080	9072888	8
53	3564662	9343082	3727179	9279447	3888560	9212986	4048756	9143718	4207719	9071665	7
54	3567380	9342045	3729878	9278363	3891240	9211854	4051416	9142540	4210358	9070440	6
55	3570097	9341007	3732577	9277277	3893919	9210722	4054075	9141361	4212996	9069215	5
56	3572814	9339968	3735275	9276191	3896598	9209589	4056734	9140181	4215634	9067989	4
57	3575531	9338928	3737973	9275104	3899277	9208455	4059393	9139001	4218272	9066762	3
58	3578248	9337888	3740671	9274016	3901955	9207320	4062051	9137819	4220909	9065535	2
59	3580964	9336846	3743369	9272928	3904633	9206185	4064709	9136637	4223546	9064307	1
60	3583679	9335804	3746066	9271839	3907311	9205049	4067366	9135455	4226183	9063078	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	69°		68°		67°		66°		65°		

NATURAL SINES.

′	25° Sine.	25° Co-sine.	26° Sine.	26° Co-sine.	27° Sine.	27° Co-sine.	28° Sine.	28° Co-sine.	29° Sine.	29° Co-sine.	′
0	4226183	9063078	4383711	8987940	4539905	8910065	4694716	8829476	4848096	8746197	60
1	4228819	9061848	4386326	8986665	4542497	8908744	4697284	8828110	4850640	8744786	59
2	4231455	9060618	4388940	8985389	4545088	8907423	4699852	8826743	4853184	8743375	58
3	4234090	9059386	4391553	8984112	4547679	8906100	4702419	8825376	4855727	8741963	57
4	4236725	9058154	4394166	8982834	4550269	8904777	4704986	8824007	4858270	8740550	56
5	4239360	9056922	4396779	8981555	4552859	8903453	4707553	8822638	4860812	8739137	55
6	4241994	9055688	4399392	8980276	4555449	8902128	4710119	8821269	4863354	8737722	54
7	4244628	9054454	4402004	8978996	4558038	8900803	4712685	8819898	4865895	8736307	53
8	4247262	9053219	4404615	8977715	4560627	8899476	4715250	8818527	4868436	8734891	52
9	4249895	9051983	4407227	8976433	4563216	8898149	4717815	8817155	4870977	8733475	51
10	4252528	9050746	4409838	8975151	4565804	8896822	4720380	8815782	4873517	8732058	50
11	4255161	9049509	4412448	8973868	4568392	8895493	4722944	8814409	4876057	8730640	49
12	4257793	9048271	4415059	8972584	4570979	8894164	4725508	8813035	4878597	8729221	48
13	4260425	9047032	4417668	8971299	4573566	8892834	4728071	8811660	4881136	8727801	47
14	4263056	9045792	4420278	8970014	4576153	8891503	4730634	8810284	4883674	8726381	46
15	4265687	9044551	4422887	8968727	4578739	8890171	4733197	8808907	4886212	8724960	45
16	4268318	9043310	4425496	8967440	4581325	8888839	4735759	8807530	4888750	8723538	44
17	4270949	9042068	4428104	8966153	4583910	8887506	4738321	8806152	4891288	8722116	43
18	4273579	9040825	4430712	8964864	4586496	8886172	4740882	8804774	4893825	8720693	42
19	4276208	9039582	4433319	8963575	4589080	8884838	4743443	8803394	4896361	8719269	41
20	4278838	9038338	4435927	8962285	4591665	8883503	4746004	8802014	4898897	8717844	40
21	4281467	9037093	4438534	8960994	4594248	8882166	4748564	8800633	4901433	8716419	39
22	4284095	9035847	4441140	8959703	4596832	8880830	4751124	8799251	4903968	8714993	38
23	4286723	9034600	4443746	8958411	4599415	8879492	4753683	8797869	4906503	8713566	37
24	4289351	9033353	4446352	8957118	4601998	8878154	4756242	8796486	4909038	8712138	36
25	4291979	9032105	4448957	8955824	4604580	8876815	4758801	8795102	4911572	8710710	35
26	4294606	9030856	4451562	8954529	4607162	8875475	4761359	8793717	4914105	8709281	34
27	4297233	9029606	4454167	8953234	4609744	8874134	4763917	8792332	4916638	8707851	33
28	4299859	9028356	4456771	8951938	4612325	8872793	4766474	8790946	4919171	8706420	32
29	4302485	9027105	4459375	8950641	4614906	8871451	4769031	8789559	4921704	8704989	31
30	4305111	9025853	4461978	8949344	4617486	8870108	4771588	8788171	4924236	8703557	30
31	4307736	9024600	4464581	8948045	4620066	8868765	4774144	8786783	4926767	8702124	29
32	4310361	9023347	4467184	8946746	4622646	8867420	4776700	8785394	4929298	8700691	28
33	4312986	9022092	4469786	8945446	4625225	8866075	4779255	8784004	4931829	8699256	27
34	4315610	9020838	4472388	8944146	4627804	8864730	4781810	8782613	4934359	8697821	26
35	4318234	9019582	4474990	8942844	4630382	8863383	4784364	8781222	4936889	8696386	25
36	4320857	9018325	4477591	8941542	4632960	8862036	4786919	8779830	4939419	8694949	24
37	4323481	9017068	4480192	8940240	4635538	8860688	4789472	8778437	4941948	8693512	23
38	4326103	9015810	4482792	8938936	4638115	8859339	4792026	8777043	4944476	8692074	22
39	4328726	9014551	4485392	8937632	4640692	8857989	4794579	8775649	4947005	8690636	21
40	4331348	9013292	4487992	8936326	4643269	8856639	4797131	8774254	4949532	8689196	20
41	4333970	9012031	4490591	8935021	4645845	8855288	4799683	8772858	4952060	8687756	19
42	4336591	9010770	4493190	8933714	4648420	8853936	4802235	8771462	4954587	8686315	18
43	4339212	9009508	4495789	8932406	4650996	8852584	4804786	8770064	4957113	8684874	17
44	4341832	9008246	4498387	8931098	4653571	8851230	4807337	8768666	4959639	8683431	16
45	4344453	9006982	4500984	8929789	4656145	8849876	4809888	8767268	4962165	8681988	15
46	4347072	9005718	4503582	8928480	4658719	8848522	4812438	8765868	4964690	8680544	14
47	4349692	9004453	4506179	8927169	4661293	8847166	4814987	8764468	4967215	8679100	13
48	4352311	9003188	4508775	8925858	4663866	8845810	4817537	8763067	4969740	8677655	12
49	4354930	9001921	4511372	8924546	4666439	8844453	4820086	8761665	4972264	8676209	11
50	4357548	9000654	4513967	8923234	4669012	8843095	4822634	8760263	4974787	8674762	10
51	4360166	8999386	4516563	8921920	4671584	8841736	4825182	8758859	4977310	8673314	9
52	4362784	8998117	4519158	8920606	4674156	8840377	4827730	8757455	4979833	8671866	8
53	4365401	8996848	4521753	8919291	4676727	8839017	4830277	8756051	4982355	8670417	7
54	4368018	8995578	4524347	8917975	4679298	8837656	4832824	8754645	4984877	8668967	6
55	4370634	8994307	4526941	8916659	4681869	8836295	4835370	8753239	4987399	8667517	5
56	4373251	8993035	4529535	8915342	4684439	8834933	4837916	8751832	4989920	8666066	4
57	4375866	8991763	4532128	8914024	4687009	8833569	4840462	8750425	4992441	8664614	3
58	4378482	8990489	4534721	8912705	4689578	8832206	4843007	8749016	4994961	8663161	2
59	4381097	8989215	4537313	8911385	4692147	8830841	4845552	8747607	4997481	8661708	1
60	4383711	8987940	4539905	8910065	4694716	8829476	4848096	8746197	5000000	8660254	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	64°		63°		62°		61°		60°		

NATURAL SINES.

′	30° Sine.	30° Co-sine.	31° Sine.	31° Co-sine.	32° Sine.	32° Co-sine.	33° Sine.	33° Co-sine.	34° Sine.	34° Co-sine.	′
0	5000000	8660254	5150381	8571673	5299193	8480481	5446390	8386706	5591929	8290376	60
1	5002519	8658799	5152874	8570174	5301659	8478939	5448830	8385121	5594340	8288749	59
2	5005037	8657344	5155367	8568675	5304125	8477397	5451269	8383536	5596751	8287121	58
3	5007556	8655887	5157859	8567175	5306591	8475853	5453707	8381950	5599162	8285493	57
4	5010073	8654430	5160351	8565674	5309057	8474309	5456145	8380363	5601572	8283864	56
5	5012591	8652973	5162842	8564173	5311521	8472765	5458583	8378775	5603981	8282234	55
6	5015107	8651514	5165333	8562671	5313986	8471219	5461020	8377187	5606390	8280603	54
7	5017624	8650055	5167824	8561168	5316450	8469673	5463456	8375598	5608798	8278972	53
8	5020140	8648595	5170314	8559664	5318913	8468126	5465892	8374009	5611206	8277340	52
9	5022655	8647134	5172804	8558160	5321376	8466579	5468328	8372418	5613614	8275708	51
10	5025170	8645673	5175293	8556655	5323839	8465030	5470763	8370827	5616021	8274074	50
11	5027685	8644211	5177782	8555149	5326301	8463481	5473198	8369236	5618428	8272440	49
12	5030199	8642748	5180270	8553643	5328763	8461932	5475632	8367643	5620834	8270806	48
13	5032713	8641284	5182758	8552135	5331224	8460381	5478066	8366050	5623239	8269170	47
14	5035227	8639820	5185246	8550627	5333685	8458830	5480499	8364456	5625645	8267534	46
15	5037740	8638355	5187733	8549119	5336145	8457278	5482932	8362862	5628049	8265897	45
16	5040252	8636889	5190219	8547609	5338605	8455726	5485365	8361266	5630453	8264260	44
17	5042765	8635423	5192705	8546099	5341065	8454172	5487797	8359670	5632857	8262622	43
18	5045276	8633956	5195191	8544588	5343523	8452618	5490228	8358074	5635260	8260983	42
19	5047788	8632488	5197676	8543077	5345982	8451064	5492659	8356476	5637663	8259343	41
20	5050298	8631019	5200161	8541564	5348440	8449508	5495090	8354878	5640066	8257703	40
21	5052809	8629549	5202646	8540051	5350898	8447952	5497520	8353279	5642467	8256062	39
22	5055319	8628079	5205130	8538538	5353355	8446395	5499950	8351680	5644869	8254420	38
23	5057828	8626608	5207613	8537023	5355812	8444838	5502379	8350080	5647270	8252778	37
24	5060338	8625137	5210096	8535508	5358268	8443279	5504807	8348479	5649670	8251135	36
25	5062846	8623664	5212579	8533992	5360724	8441720	5507236	8346877	5652070	8249491	35
26	5065355	8622191	5215061	8532475	5363179	8440161	5509663	8345275	5654469	8247847	34
27	5067863	8620717	5217543	8530958	5365634	8438600	5512091	8343672	5656868	8246202	33
28	5070370	8619243	5220024	8529440	5368089	8437039	5514518	8342068	5659267	8244556	32
29	5072877	8617768	5222505	8527921	5370543	8435477	5516944	8340463	5661665	8242909	31
30	5075384	8616292	5224986	8526402	5372996	8433914	5519370	8338858	5664062	8241262	30
31	5077890	8614815	5227466	8524881	5375449	8432351	5521795	8337252	5666459	8239614	29
32	5080396	8613337	5229945	8523360	5377902	8430787	5524220	8335646	5668856	8237965	28
33	5082901	8611859	5232424	8521839	5380354	8429222	5526645	8334038	5671252	8236316	27
34	5085406	8610380	5234903	8520316	5382806	8427657	5529069	8332430	5673648	8234666	26
35	5087910	8608901	5237381	8518793	5385257	8426091	5531492	8330822	5676043	8233015	25
36	5090414	8607420	5239859	8517269	5387708	8424524	5533915	8329212	5678437	8231364	24
37	5092918	8605939	5242336	8515745	5390158	8422956	5536338	8327602	5680832	8229712	23
38	5095421	8604457	5244813	8514219	5392608	8421388	5538760	8325991	5683225	8228059	22
39	5097924	8602975	5247290	8512693	5395058	8419819	5541182	8324380	5685619	8226405	21
40	5100426	8601491	5249766	8511167	5397507	8418249	5543603	8322768	5688011	8224751	20
41	5102928	8600007	5252241	8509639	5399955	8416679	5546024	8321155	5690403	8223096	19
42	5105429	8598523	5254717	8508111	5402403	8415108	5548444	8319541	5692795	8221440	18
43	5107930	8597037	5257191	8506582	5404851	8413536	5550864	8317927	5695187	8219784	17
44	5110431	8595551	5259665	8505053	5407298	8411963	5553283	8316312	5697577	8218127	16
45	5112931	8594064	5262139	8503522	5409745	8410390	5555702	8314696	5699968	8216469	15
46	5115431	8592576	5264613	8501991	5412191	8408816	5558121	8313080	5702357	8214811	14
47	5117930	8591088	5267085	8500459	5414637	8407241	5560539	8311463	5704747	8213152	13
48	5120429	8589599	5269558	8498927	5417082	8405666	5562956	8309845	5707136	8211492	12
49	5122927	8588109	5272030	8497394	5419527	8404090	5565373	8308226	5709524	8209832	11
50	5125425	8586619	5274502	8495860	5421971	8402513	5567790	8306607	5711912	8208170	10
51	5127923	8585127	5276973	8494325	5424415	8400936	5570206	8304987	5714299	8206509	9
52	5130420	8583635	5279443	8492790	5426859	8399357	5572621	8303366	5716686	8204846	8
53	5132916	8582143	5281914	8491254	5429302	8397778	5575036	8301745	5719073	8203183	7
54	5135413	8580649	5284383	8489717	5431744	8396199	5577451	8300123	5721459	8201519	6
55	5137908	8579155	5286853	8488179	5434187	8394618	5579865	8298500	5723844	8199854	5
56	5140404	8577660	5289322	8486641	5436628	8393037	5582279	8296877	5726229	8198189	4
57	5142899	8576164	5291790	8485102	5439069	8391455	5584692	8295252	5728614	8196523	3
58	5145393	8574668	5294258	8483562	5441510	8389873	5587105	8293628	5730998	8194856	2
59	5147887	8573171	5296726	8482022	5443951	8388290	5589517	8292002	5733381	8193189	1
60	5150381	8571673	5299193	8480481	5446390	8386706	5591929	8290376	5735764	8191520	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	59°		58°		57°		56°		55°		

NATURAL SINES

/	35°		36°		37°		38°		39°		/
	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	
0	5735764	8191520	5877853	8090170	6018150	7986355	6156615	7880108	6293204	7771460	60
1	5738147	8189852	5880206	8088460	6020473	7984604	6158907	7878316	6295464	7769629	59
2	5740529	8188182	5882558	8086749	6022795	7982853	6161198	7876524	6297724	7767797	58
3	5742911	8186512	5884910	8085037	6025117	7981100	6163489	7874732	6299983	7765965	57
4	5745292	8184841	5887262	8083325	6027439	7979347	6165780	7872939	6302242	7764132	56
5	5747672	8183169	5889613	8081612	6029760	7977594	6168069	7871145	6304500	7762298	55
6	5750053	8181497	5891964	8079899	6032080	7975839	6170359	7869350	6306758	7760464	54
7	5752432	8179824	5894314	8078185	6034400	7974084	6172648	7867555	6309015	7758629	53
8	5754811	8178151	5896663	8076470	6036719	7972329	6174936	7865759	6311272	7756794	52
9	5757190	8176476	5899012	8074754	6039038	7970572	6177224	7863963	6313528	7754957	51
10	5759568	8174801	5901361	8073038	6041356	7968815	6179511	7862165	6315784	7753121	50
11	5761946	8173125	5903709	8071321	6043674	7967058	6181798	7860367	6318039	7751283	49
12	5764323	8171449	5906057	8069603	6045991	7965299	6184084	7858569	6320293	7749445	48
13	5766700	8169772	5908404	8067885	6048308	7963540	6186370	7856770	6322547	7747606	47
14	5769076	8168094	5910750	8066166	6050624	7961780	6188655	7854970	6324800	7745767	46
15	5771452	8166416	5913096	8064446	6052940	7960020	6190939	7853169	6327053	7743926	45
16	5773827	8164736	5915442	8062726	6055255	7958259	6193224	7851368	6329306	7742086	44
17	5776202	8163056	5917787	8061005	6057570	7956497	6195507	7849566	6331557	7740244	43
18	5778576	8161376	5920132	8059283	6059884	7954735	6197790	7847764	6333809	7738402	42
19	5780950	8159695	5922476	8057560	6062198	7952972	6200073	7845961	6336059	7736559	41
20	5783323	8158013	5924819	8055837	6064511	7951208	6202355	7844157	6338310	7734716	40
21	5785696	8156330	5927163	8054113	6066824	7949444	6204636	7842352	6340559	7732872	39
22	5788069	8154647	5929505	8052389	6069136	7947678	6206917	7840547	6342808	7731027	38
23	5790440	8152963	5931847	8050664	6071447	7945913	6209198	7838741	6345057	7729182	37
24	5792812	8151278	5934189	8048938	6073758	7944146	6211478	7836935	6347305	7727336	36
25	5795183	8149593	5936530	8047211	6076069	7942379	6213757	7835127	6349553	7725489	35
26	5797553	8147906	5938871	8045484	6078379	7940611	6216036	7833320	6351800	7723642	34
27	5799923	8146220	5941211	8043756	6080689	7938843	6218314	7831511	6354046	7721794	33
28	5802292	8144532	5943550	8042028	6082998	7937074	6220592	7829702	6356292	7719945	32
29	5804661	8142844	5945889	8040299	6085306	7935304	6222870	7827892	6358537	7718096	31
30	5807030	8141155	5948228	8038569	6087614	7933533	6225146	7826082	6360782	7716246	30
31	5809397	8139466	5950566	8036838	6089922	7931762	6227423	7824270	6363026	7714395	29
32	5811765	8137775	5952904	8035107	6092229	7929990	6229698	7822459	6365270	7712544	28
33	5814132	8136084	5955241	8033375	6094535	7928218	6231974	7820646	6367513	7710692	27
34	5816498	8134393	5957577	8031642	6096841	7926445	6234248	7818833	6369756	7708840	26
35	5818864	8132701	5959913	8029909	6099147	7924671	6236522	7817019	6371998	7706986	25
36	5821230	8131008	5962249	8028175	6101452	7922896	6238796	7815205	6374240	7705132	24
37	5823595	8129314	5964584	8026440	6103756	7921121	6241069	7813390	6376481	7703278	23
38	5825959	8127620	5966918	8024705	6106060	7919345	6243342	7811574	6378721	7701423	22
39	5828323	8125925	5969252	8022969	6108363	7917569	6245614	7809757	6380961	7699567	21
40	5830687	8124229	5971586	8021232	6110666	7915792	6247885	7807940	6383201	7697710	20
41	5833050	8122532	5973919	8019495	6112969	7914014	6250156	7806123	6385440	7695853	19
42	5835412	8120835	5976251	8017756	6115270	7912235	6252427	7804304	6387678	7693996	18
43	5837774	8119137	5978583	8016018	6117572	7910456	6254696	7802485	6389916	7692137	17
44	5840136	8117439	5980915	8014278	6119873	7908676	6256966	7800665	6392153	7690278	16
45	5842497	8115740	5983246	8012538	6122173	7906896	6259235	7798845	6394390	7688418	15
46	5844857	8114040	5985577	8010797	6124473	7905115	6261503	7797024	6396626	7686558	14
47	5847217	8112339	5987906	8009056	6126772	7903333	6263771	7795202	6398862	7684697	13
48	5849577	8110638	5990236	8007314	6129071	7901550	6266038	7793380	6401097	7682835	12
49	5851936	8108936	5992565	8005571	6131369	7899767	6268305	7791557	6403332	7680973	11
50	5854294	8107234	5994893	8003827	6133666	7897983	6270571	7789733	6405566	7679110	10
51	5856652	8105530	5997221	8002083	6135964	7896198	6272837	7787909	6407799	7677246	9
52	5859010	8103826	5999549	8000338	6138260	7894413	6275102	7786084	6410032	7675382	8
53	5861367	8102122	6001876	7998593	6140556	7892627	6277366	7784258	6412264	7673517	7
54	5863724	8100416	6004202	7996847	6142852	7890841	6279631	7782431	6414496	7671652	6
55	5866080	8098710	6006528	7995100	6145147	7889054	6281894	7780604	6416728	7669785	5
56	5868435	8097004	6008854	7993352	6147442	7887266	6284157	7778777	6418958	7667918	4
57	5870790	8095296	6011179	7991604	6149736	7885477	6286420	7776949	6421189	7666051	3
58	5873145	8093588	6013503	7989855	6152029	7883688	6288682	7775120	6423418	7664183	2
59	5875499	8091879	6015827	7988105	6154322	7881898	6290943	7773290	6425647	7662314	1
60	5877853	8090170	6018150	7986355	6156615	7880108	6293204	7771460	6427876	7660444	0
/	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	/
	54°		53°		52°		51°		50°		

NATURAL SINES.

′	40° Sine.	40° Co-sine.	41° Sine.	41° Co-sine.	42° Sine.	42° Co-sine.	43° Sine.	43° Co-sine.	44° Sine.	44° Co-sine.	′
0	6427876	7660444	6560590	7547096	6691306	7431448	6819984	7313537	6946584	7193398	60
1	6430104	7658574	6562785	7545187	6693468	7429502	6822111	7311553	6948676	7191377	59
2	6432332	7656704	6564980	7543278	6695628	7427554	6824237	7309568	6950767	7189355	58
3	6434559	7654832	6567174	7541368	6697789	7425606	6826363	7307583	6952858	7187333	57
4	6436785	7652960	6569367	7539457	6699948	7423658	6828489	7305597	6954949	7185310	56
5	6439011	7651087	6571560	7537546	6702108	7421708	6830613	7303610	6957039	7183287	55
6	6441236	7649214	6573752	7535634	6704266	7419758	6832738	7301623	6959128	7181263	54
7	6443461	7647340	6575944	7533721	6706424	7417808	6834861	7299635	6961217	7179238	53
8	6445685	7645465	6578135	7531808	6708582	7415857	6836984	7297646	6963305	7177213	52
9	6447909	7643590	6580326	7529894	6710739	7413905	6839107	7295657	6965392	7175187	51
10	6450132	7641714	6582516	7527980	6712895	7411953	6841229	7293668	6967479	7173161	50
11	6452355	7639838	6584706	7526065	6715051	7410000	6843350	7291677	6969565	7171134	49
12	6454577	7637960	6586895	7524149	6717206	7408046	6845471	7289686	6971651	7169106	48
13	6456798	7636082	6589083	7522233	6719361	7406092	6847591	7287695	6973736	7167078	47
14	6459019	7634204	6591271	7520316	6721515	7404137	6849711	7285703	6975821	7165049	46
15	6461240	7632325	6593458	7518398	6723668	7402181	6851830	7283710	6977905	7163019	45
16	6463460	7630445	6595645	7516480	6725821	7400225	6853948	7281716	6979988	7160989	44
17	6465679	7628564	6597831	7514561	6727973	7398268	6856066	7279722	6982071	7158959	43
18	6467898	7626683	6600017	7512641	6730125	7396311	6858184	7277728	6984153	7156927	42
19	6470116	7624802	6602202	7510721	6732276	7394353	6860300	7275732	6986234	7154895	41
20	6472334	7622919	6604386	7508800	6734427	7392394	6862416	7273736	6988315	7152863	40
21	6474551	7621036	6606570	7506879	6736577	7390435	6864532	7271740	6990396	7150830	39
22	6476767	7619152	6608754	7504957	6738727	7388475	6866647	7269743	6992476	7148796	38
23	6478984	7617268	6610936	7503034	6740876	7386515	6868761	7267745	6994555	7146762	37
24	6481199	7615383	6613119	7501111	6743024	7384553	6870875	7265747	6996633	7144727	36
25	6483414	7613497	6615300	7499187	6745172	7382592	6872988	7263748	6998711	7142691	35
26	6485628	7611611	6617482	7497262	6747319	7380629	6875101	7261748	7000789	7140655	34
27	6487842	7609724	6619662	7495337	6749466	7378666	6877213	7259748	7002866	7138618	33
28	6490056	7607837	6621842	7493411	6751612	7376703	6879325	7257747	7004942	7136581	32
29	6492268	7605949	6624022	7491484	6753757	7374738	6881435	7255746	7007018	7134543	31
30	6494480	7604060	6626200	7489557	6755902	7372773	6883546	7253744	7009093	7132504	30
31	6496692	7602170	6628379	7487629	6758046	7370808	6885655	7251741	7011167	7130465	29
32	6498903	7600280	6630557	7485701	6760190	7368842	6887765	7249738	7013241	7128426	28
33	6501114	7598389	6632734	7483772	6762333	7366875	6889873	7247734	7015314	7126385	27
34	6503324	7596498	6634910	7481842	6764476	7364908	6891981	7245729	7017387	7124344	26
35	6505533	7594606	6637087	7479912	6766618	7362940	6894089	7243724	7019459	7122303	25
36	6507742	7592713	6639262	7477981	6768760	7360971	6896195	7241719	7021531	7120260	24
37	6509951	7590820	6641437	7476049	6770901	7359002	6898302	7239712	7023601	7118218	23
38	6512158	7588926	6643612	7474117	6773041	7357032	6900407	7237705	7025672	7116174	22
39	6514366	7587031	6645785	7472184	6775181	7355061	6902512	7235698	7027741	7114130	21
40	6516572	7585136	6647959	7470251	6777320	7353090	6904617	7233690	7029811	7112086	20
41	6518778	7583240	6650131	7468317	6779459	7351118	6906721	7231681	7031879	7110041	19
42	6520984	7581343	6652304	7466382	6781597	7349146	6908824	7229671	7033947	7107995	18
43	6523189	7579446	6654475	7464446	6783734	7347173	6910927	7227661	7036014	7105948	17
44	6525394	7577548	6656646	7462510	6785871	7345199	6913029	7225651	7038081	7103901	16
45	6527598	7575650	6658817	7460574	6788007	7343225	6915131	7223640	7040147	7101854	15
46	6529801	7573751	6660987	7458636	6790143	7341250	6917232	7221628	7042213	7099806	14
47	6532004	7571851	6663156	7456699	6792278	7339275	6919332	7219615	7044278	7097757	13
48	6534206	7569951	6665325	7454760	6794413	7337299	6921432	7217602	7046342	7095707	12
49	6536408	7568050	6667493	7452821	6796547	7335322	6923531	7215589	7048406	7093657	11
50	6538609	7566148	6669661	7450881	6798681	7333345	6925630	7213574	7050469	7091607	10
51	6540810	7564246	6671828	7448941	6800813	7331367	6927728	7211559	7052532	7089556	9
52	6543010	7562343	6673994	7446999	6802946	7329388	6929825	7209544	7054594	7087504	8
53	6545209	7560439	6676160	7445058	6805078	7327409	6931922	7207528	7056655	7085451	7
54	6547408	7558535	6678326	7443115	6807209	7325429	6934018	7205511	7058716	7083398	6
55	6549607	7556630	6680490	7441173	6809339	7323449	6936114	7203494	7060776	7081345	5
56	6551804	7554724	6682655	7439229	6811469	7321467	6938209	7201476	7062835	7079291	4
57	6554002	7552818	6684818	7437285	6813599	7319486	6940304	7199457	7064894	7077236	3
58	6556198	7550911	6686981	7435340	6815728	7317503	6942398	7197438	7066953	7075180	2
59	6558395	7549004	6689144	7433394	6817856	7315521	6944491	7195418	7069011	7073124	1
60	6560590	7547096	6691306	7431448	6819984	7313537	6946584	7193398	7071068	7071068	0
′	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	Co-sine.	Sine.	′
	49°		48°		47°		46°		45°		

DIFFERENCE OF LATITUDE AND DEPARTURE

Course.		Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Course.	
Pts.	D.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	D.	Pts.
	1	0.9998	0.0175	1.9997	0.0349	2.9995	0.0524	3.9994	0.0698	4.9992	0.0873	89	
	2	0.9994	0.0349	1.9988	0.0698	2.9982	0.1047	3.9976	0.1396	4.9970	0.1745	88	
0¼		0.9988	0.0491	1.9976	0.0981	2.9964	0.1472	3.9952	0.1963	4.9940	0.2453		7¾
	3	0.9986	0.0523	1.9973	0.1047	2.9959	0.1570	3.9945	0.2093	4.9931	0.2617	87	
	4	0.9976	0.0698	1.9951	0.1395	2.9927	0.2093	3.9903	0.2790	4.9878	0.3488	86	
	5	0.9962	0.0872	1.9924	0.1743	2.9886	0.2615	3.9848	0.3486	4.9810	0.4358	85	
0½		0.9952	0.0980	1.9904	0.1960	2.9856	0.2941	3.9807	0.3921	4.9759	0.4901		7½
	6	0.9945	0.1045	1.9890	0.2091	2.9836	0.3136	3.9781	0.4181	4.9726	0.5226	84	
	7	0.9925	0.1219	1.9851	0.2437	2.9776	0.3656	3.9702	0.4875	4.9627	0.6093	83	
	8	0.9903	0.1392	1.9805	0.2783	2.9708	0.4175	3.9611	0.5567	4.9513	0.6959	82	
0¾		0.9892	0.1467	1.9784	0.2935	2.9675	0.4402	3.9567	0.5869	4.9459	0.7337		7¼
	9	0.9877	0.1564	1.9754	0.3129	2.9631	0.4693	3.9508	0.6257	4.9384	0.7822	81	
	10	0.9848	0.1736	1.9696	0.3473	2.9544	0.5209	3.9392	0.6946	4.9240	0.8682	80	
	11	0.9816	0.1908	1.9633	0.3816	2.9449	0.5724	3.9265	0.7632	4.9081	0.9540	79	
1		0.9808	0.1951	1.9616	0.3902	2.9424	0.5853	3.9231	0.7804	4.9039	0.9755		7
	12	0.9781	0.2079	1.9563	0.4158	2.9344	0.6237	3.9126	0.8316	4.8907	1.0396	78	
	13	0.9744	0.2250	1.9487	0.4499	2.9231	0.6749	3.8975	0.8998	4.8719	1.1248	77	
	14	0.9703	0.2419	1.9406	0.4838	2.9109	0.7258	3.8812	0.9677	4.8515	1.2096	76	
1¼		0.9700	0.2430	1.9401	0.4860	2.9101	0.7289	3.8801	0.9719	4.8502	1.2149		6¾
	15	0.9659	0.2588	1.9319	0.5176	2.8978	0.7765	3.8637	1.0353	4.8296	1.2941	75	
	16	0.9613	0.2756	1.9225	0.5513	2.8838	0.8269	3.8450	1.1025	4.8063	1.3782	74	
1½		0.9569	0.2903	1.9139	0.5806	2.8708	0.8709	3.8278	1.1611	4.7847	1.4514		6½
	17	0.9563	0.2924	1.9126	0.5847	2.8689	0.8771	3.8252	1.1695	4.7815	1.4619	73	
	18	0.9511	0.3090	1.9021	0.6180	2.8532	0.9271	3.8042	1.2361	4.7553	1.5451	72	
	19	0.9455	0.3256	1.8910	0.6511	2.8366	0.9767	3.7821	1.3023	4.7276	1.6278	71	
1¾		0.9415	0.3369	1.8831	0.6738	2.8246	1.0107	3.7662	1.3476	4.7077	1.6844		6¼
	20	0.9397	0.3420	1.8794	0.6840	2.8191	1.0261	3.7588	1.3681	4.6985	1.7101	70	
	21	0.9336	0.3584	1.8672	0.7167	2.8007	1.0751	3.7343	1.4335	4.6679	1.7918	69	
	22	0.9272	0.3746	1.8544	0.7492	2.7816	1.1238	3.7087	1.4984	4.6359	1.8730	68	
2		0.9239	0.3827	1.8478	0.7654	2.7716	1.1481	3.6955	1.5307	4.6194	1.9134		6
	23	0.9205	0.3907	1.8410	0.7815	2.7615	1.1722	3.6820	1.5629	4.6025	1.9537	67	
	24	0.9135	0.4067	1.8271	0.8135	2.7406	1.2202	3.6542	1.6269	4.5677	2.0337	66	
	25	0.9063	0.4226	1.8126	0.8452	2.7189	1.2679	3.6252	1.6905	4.5315	2.1131	65	
2¼		0.9040	0.4276	1.8080	0.8551	2.7120	1.2827	3.6160	1.7102	4.5199	2.1378		5¾
	26	0.8988	0.4384	1.7976	0.8767	2.6964	1.3151	3.5952	1.7535	4.4940	2.1919	64	
	27	0.8910	0.4540	1.7820	0.9080	2.6730	1.3620	3.5640	1.8160	4.4550	2.2700	63	
	28	0.8829	0.4695	1.7659	0.9389	2.6488	1.4084	3.5318	1.8779	4.4147	2.3474	62	
2½		0.8819	0.4714	1.7638	0.9428	2.6458	1.4142	3.5277	1.8856	4.4096	2.3570		5½
	29	0.8746	0.4848	1.7492	0.9696	2.6239	1.4544	3.4985	1.9392	4.3731	2.4240	61	
	30	0.8660	0.5000	1.7321	1.0000	2.5981	1.5000	3.4641	2.0000	4.3301	2.5000	60	
2¾		0.8577	0.5141	1.7155	1.0282	2.5732	1.5423	3.4309	2.0564	4.2886	2.5705		5¼
	31	0.8572	0.5150	1.7143	1.0301	2.5715	1.5451	3.4287	2.0602	4.2858	2.5752	59	
	32	0.8480	0.5299	1.6961	1.0598	2.5441	1.5898	3.3922	2.1197	4.2402	2.6496	58	
	33	0.8387	0.5446	1.6773	1.0893	2.5160	1.6339	3.3547	2.1786	4.1934	2.7232	57	
3		0.8315	0.5556	1.6629	1.1111	2.4944	1.6667	3.3259	2.2223	4.1573	2.7779		5
	34	0.8290	0.5592	1.6581	1.1184	2.4871	1.6776	3.3162	2.2368	4.1452	2.7960	56	
	35	0.8192	0.5736	1.6383	1.1472	2.4575	1.7207	3.2766	2.2943	4.0958	2.8679	55	
	36	0.8090	0.5878	1.6180	1.1756	2.4271	1.7634	3.2361	2.3511	4.0451	2.9389	54	
3¼		0.8032	0.5957	1.6064	1.1914	2.4096	1.7871	3.2128	2.3828	4.0160	2.9785		4¾
	37	0.7986	0.6018	1.5973	1.2036	2.3959	1.8054	3.1945	2.4073	3.9932	3.0091	53	
	38	0.7880	0.6157	1.5760	1.2313	2.3640	1.8470	3.1520	2.4626	3.9401	3.0783	52	
	39	0.7771	0.6293	1.5543	1.2586	2.3314	1.8880	3.1086	2.5173	3 8857	3.1466	51	
3½		0.7730	0.6344	1.5460	1.2688	2.3190	1.9032	3.0920	2.5376	3.8650	3.1720		4½
	40	0.7660	0.6428	1.5321	1.2856	2.2981	1.9284	3.0642	2.5712	3.8302	3.2139	50	
	41	0.7547	0.6561	1.5094	1.3121	2.2641	1.9682	3.0188	2.6242	3.7735	3.2803	49	
	42	0.7431	0.6691	1.4803	1.3383	2.2294	2.0074	2.9726	2.6765	3.7157	3.3457	48	
3¾		0.7410	0.6716	1.4819	1.3431	2.2229	2.0147	2.9638	2.6862	3.7048	3.3578		4¼
	43	0.7314	0.6820	1.4627	1.3640	2.1941	2.0460	2.9254	2.7280	3.6568	3.4100	47	
	44	0.7193	0.6947	1.4387	1.3893	2.1580	2.0840	2.8774	2.7786	3.5967	3.4733	46	
4	45	0.7071	0.7071	1.4142	1.4142	2.1213	2.1213	2.8284	2.8284	3.5355	3.5355	45	4
Pts.	D.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	D.	Pts.
Course.		Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Course.	

Course.		Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Course.	
Pts.	D.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	D.	Pts.
	1	5.9991	0.1047	6.9989	0.1222	7.9988	0.1396	8.9986	0.1571	9.9985	0.1745	89	
	2	5.9963	0.2094	6.9957	0.2443	7.9951	0.2792	8.9945	0.3141	9.9939	0.3490	88	
0¼		5.9928	0.2944	6.9916	0.3435	7.9904	0.3925	8.9892	0.4416	9.9880	0.4907		7¾
	3	5.9918	0.3140	6.9904	0.3664	7.9890	0.4187	8.9877	0.4710	9.9863	0.5234	87	
	4	5.9854	0.4185	6.9829	0.4883	7.9805	0.5581	8.9781	0.6278	9.9756	0.6976	86	
	5	5.9772	0.5229	6.9734	0.6101	7.9696	0.6972	8.9658	0.7844	9.9619	0.8716	85	
0½		5.9771	0.5881	6.9663	0.6861	7.9615	0.7841	8.9567	0.8822	9.9518	0.9802		7½
	6	5.9671	0.6272	6.9617	0.7317	7.9562	0.8362	8.9507	0.9408	9.9452	1.0453	84	
	7	5.9553	0.7312	6.9478	0.8531	7.9404	0.9750	8.9329	1.0968	9.9255	1.2187	83	
	8	5.9416	0.8350	6.9319	0.9742	7.9221	1.1134	8.9124	1.2526	9.9027	1.3917	82	
0¾		5.9351	0.9804	6.9242	1.0271	7.9184	1.1738	8.9026	1.3206	9.8918	1.4673		7½
	9	5.9261	0.9386	6.9139	1.0950	7.9015	1.2515	8.8892	1.4079	9.8769	1.5643	81	
	10	5.9088	1.0419	6.8937	1.2155	7.8785	1.3892	8.8633	1.5628	9.8481	1.7365	80	
	11	5.8898	1.1449	6.8714	1.3357	7.8530	1.5265	8.8346	1.7173	9.8163	1.9081	79	
1		5.8847	1.1705	6.8655	1.3686	7.8465	1.5607	8.8271	1.7538	9.8079	1.9509		7
	12	5.8689	1.2475	6.8470	1.4554	7.8252	1.6633	8.8033	1.8712	9.7815	2.0791	78	
	13	5.8462	1.3497	6.8206	1.5747	7.7950	1.7996	8.7693	2.0246	9.7437	2.2495	77	
	14	5.8218	1.4515	6.7921	1.6935	7.7624	1.9354	8.7327	2.1773	9.7030	2.4192	76	
1¼		5.8202	1.4579	6.7902	1.7009	7.7602	1.9436	8.7303	2.1868	9.7003	2.4296		6¾
	15	5.7956	1.5529	6.7615	1.8117	7.7274	2.0706	8.6933	2.3294	9.6593	2.5882	75	
	16	5.7676	1.6538	6.7288	1.9295	7.6901	2.2051	8.6513	2.4807	9.6120	2.7562	74	
1½		5.7416	1.7417	6.6986	2.0320	7.6555	2.3223	8.6125	2.6126	9.5694	2.9028		6½
	17	5.7378	1.7542	6.6941	2.0466	7.6504	2.3390	8.6067	2.6313	9.5630	2.9237	73	
	18	5.7063	1.8541	6.6574	2.1631	7.6085	2.4721	8.5595	2.7812	9.5106	3.0902	72	
	19	5.6731	1.9534	6.6186	2.2790	7.5642	2.6045	8.5097	2.9301	9.4552	3.2557	71	
1¾		5.6493	2.0213	6.5908	2.3592	7.5324	2.6951	8.4739	3.0320	9.4154	3.3689		6¼
	20	5.6382	2.0521	6.5778	2.3941	7.5175	2.7362	8.4572	3.0782	9.3969	3.4202	70	
	21	5.6015	2.1502	6.5351	2.5086	7.4686	2.8669	8.4022	3.2253	9.3358	3.5837	69	
	22	5.5631	2.2476	6.4903	2.6232	7.4175	2.9969	8.3447	3.3715	9.2718	3.7461	68	
2		5.5433	2.2961	6.4672	2.6789	7.3910	3.0615	8.3149	3.4442	9.2389	3.8268		6
	23	5.5230	2.3444	6.4435	2.7351	7.3640	3.1258	8.2845	3.5166	9.2050	3.9073	67	
	24	5.4813	2.4404	6.3948	2.8472	7.3084	3.2539	8.2219	3.6606	9.1355	4.0674	66	
	25	5.4376	2.5357	6.3442	2.9583	7.2505	3.3809	8.1568	3.8036	9.0631	4.2262	65	
2¼		5.4239	2.5653	6.3279	2.9920	7.2319	3.4204	8.1359	3.8488	9.0399	4.2756		5¾
	26	5.3928	2.6302	6.2916	3.0686	7.1904	3.5070	8.0891	3.9453	8.9879	4.3837	64	
	27	5.3460	2.7239	6.2370	3.1779	7.1280	3.6319	8.0191	4.0859	8.9101	4.5399	63	
	28	5.2977	2.8168	6.1806	3.2863	7.0636	3.7558	7.9465	4.2252	8.8295	4.6947	62	
2½		5.2915	2.8284	6.1734	3.2998	7.0554	3.7712	7.9373	4.2426	8.8192	4.7140		5½
	29	5.2477	2.9089	6.1223	3.3937	6.9970	3.8785	7.8716	4.3633	8.7462	4.8481	61	
	30	5.1962	3.0000	6.0622	3.5000	6.9282	4.0000	7.7942	4.5000	8.6603	5.0000	60	
2¾		5.1464	3.0846	6.0041	3.5987	6.8618	4.1128	7.7196	4.6269	8.5778	5.1410		5¼
	31	5.1430	3.0902	6.0002	3.6053	6.8573	4.1203	7.7145	4.6353	8.5717	5.1504	59	
	32	5.0883	3.1795	5.9363	3.7094	6.7844	4.2394	7.6324	4.7093	8.4805	5.2992	58	
	33	5.0320	3.2678	5.8707	3.8125	6.7094	4.3571	7.5480	4.9018	8.3867	5.4464	57	
3		4.9888	3.3334	5.8203	3.8890	6.6518	4.4446	7.4832	5.0001	8.3147	5.5557		5
	34	4.9742	3.3552	5.8033	3.9144	6.6323	4.4735	7.4613	5.0327	8.2904	5.5919	56	
	35	4.9149	3.4415	5.7341	4.0150	6.5532	4.5886	7.3724	5.1622	8.1915	5.7358	55	
	36	4.8541	3.5267	5.6631	4.1145	6.4721	4.7023	7.2812	5.2901	8.0902	5.8779	54	
3¼		4.8192	3.5742	5.6225	4.1699	6.4257	4.7656	7.2289	5.3613	8.0321	5.9570		4¾
	37	4.7918	3.6109	5.5904	4.2127	6.3891	4.8145	7.1877	5.4163	7.9864	6.0182	53	
	38	4.7281	3.6940	5.5161	4.3096	6.3041	4.9253	7.0921	5.5409	7.8801	6.1566	52	
	39	4.6629	3.7759	5.4400	4.4052	6.2172	5.0346	6.9943	5.6639	7.7715	6.2932	51	
3½		4.6381	3.8064	5.4111	4.4408	6.1841	5.0751	6.9571	5.7095	7.7301	6.3439		4½
	40	4.5963	3.8567	5.3623	4.4995	6.1284	5.1423	6.8944	5.7851	7.6604	6.4279	50	
	41	4.5283	3.9363	5.2830	4.5924	6.0377	5.2485	6.7924	5.9045	7.5471	6.5606	49	
	42	4.4589	4.0148	5.2020	4.6839	5.9452	5.3530	6.6883	6.0222	7.4314	6.6913	48	
3¾		4.4457	4.0294	5.1867	4.7009	5.9276	5.3725	6.6686	6.0440	7.4095	6.7156		4¼
	43	4.3881	4.0920	5.1195	4.7740	5.8508	5.4560	6.5822	6.1380	7.3135	6.8200	47	
	44	4.3160	4.1680	5.0354	4.8626	5.7547	5.5573	6.4741	6.2519	7.1934	6.9466	46	
4	45	4.2426	4.2426	4.9497	4.9497	5.6509	5.6569	6.3640	6.3640	7.0711	7.0711	45	4
Pts.	D.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	D.	Pts.
Course.		Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Course.	

MERIDIONAL PARTS.

′	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	′
0	0	60	120	180	240	300	361	421	482	542	603	664	725	787	848	910	0
1	1	61	121	181	241	301	362	422	483	543	604	665	726	788	850	911	1
2	2	62	122	182	242	302	363	423	484	544	605	666	727	789	851	913	2
3	3	63	123	183	243	303	364	424	485	545	606	667	728	790	852	914	3
4	4	64	124	184	244	304	365	425	486	546	607	668	729	791	853	915	4
5	5	65	125	185	245	305	366	426	487	547	608	669	730	792	854	916	5
6	6	66	126	186	246	306	367	427	488	548	609	670	731	793	855	917	6
7	7	67	127	187	247	307	368	428	489	549	610	671	732	794	856	918	7
8	8	68	128	188	248	308	369	429	490	550	611	672	734	795	857	919	8
9	9	69	129	189	249	309	370	430	491	551	612	673	735	796	858	920	9
10	10	70	130	190	250	310	371	431	492	552	613	674	736	797	859	921	10
11	11	71	131	191	251	311	372	432	493	553	614	675	737	798	860	922	11
12	12	72	132	192	252	312	373	433	494	554	615	676	738	799	861	923	12
13	13	73	133	193	253	313	374	434	495	555	616	677	739	800	862	924	13
14	14	74	134	194	254	314	375	435	496	556	617	678	740	801	863	925	14
15	15	75	135	195	255	315	376	436	497	557	618	679	741	802	864	926	15
16	16	76	136	196	256	316	377	437	498	558	619	680	742	803	865	927	16
17	17	77	137	197	257	317	378	438	499	559	620	681	743	804	866	928	17
18	18	78	138	198	258	318	379	439	500	560	621	682	744	805	867	929	18
19	19	79	139	199	259	319	380	440	501	561	622	683	745	806	868	930	19
20	20	80	140	200	260	320	381	441	502	562	623	684	746	807	869	931	20
21	21	81	141	201	261	321	382	442	503	564	624	685	747	808	870	932	21
22	22	82	142	202	262	322	383	443	504	565	625	687	748	809	871	933	22
23	23	83	143	203	263	323	384	444	505	566	626	688	749	810	872	934	23
24	24	84	144	204	264	324	385	445	506	567	627	689	750	811	873	935	24
25	25	85	145	205	265	325	386	446	507	568	628	690	751	812	874	936	25
26	26	86	146	206	266	326	387	447	508	569	629	691	752	813	875	937	26
27	27	87	147	207	267	327	388	448	509	570	631	692	753	815	876	938	27
28	28	88	148	208	268	328	389	449	510	571	632	693	754	816	877	939	28
29	29	89	149	209	269	330	390	450	511	572	633	694	755	817	878	941	29
30	30	90	150	210	270	331	391	451	512	573	634	695	756	818	879	942	30
31	31	91	151	211	271	332	392	452	513	574	635	696	757	819	880	943	31
32	32	92	152	212	272	333	393	453	514	575	636	697	758	820	882	944	32
33	33	93	153	213	273	334	394	454	515	576	637	698	759	821	883	945	33
34	34	94	154	214	274	335	395	455	516	577	638	699	760	822	884	946	34
35	35	95	155	215	275	336	396	456	517	578	639	700	761	823	885	947	35
36	36	96	156	216	276	337	397	457	518	579	640	701	762	824	886	948	36
37	37	97	157	217	277	338	398	458	519	580	641	702	763	825	887	949	37
38	38	98	158	218	278	339	399	459	520	581	642	703	764	826	888	950	38
39	39	99	159	219	279	340	400	460	521	582	643	704	765	827	889	951	39
40	40	100	160	220	280	341	401	461	522	583	644	705	766	828	890	952	40
41	41	101	161	221	281	342	402	462	523	584	645	706	767	829	891	953	41
42	42	102	162	222	282	343	403	463	524	585	646	707	768	830	892	954	42
43	43	103	163	223	283	344	404	464	525	586	647	708	769	831	893	955	43
44	44	104	164	224	284	345	405	465	526	587	648	709	770	832	894	956	44
45	45	105	165	225	285	346	406	466	527	588	649	710	771	833	895	957	45
46	46	106	166	226	286	347	407	467	528	589	650	711	772	834	896	958	46
47	47	107	167	227	287	348	408	468	529	590	651	712	773	835	897	959	47
48	48	108	168	228	288	349	409	469	530	591	652	713	774	836	898	960	48
49	49	109	169	229	289	350	410	470	531	592	653	714	775	837	899	961	49
50	50	110	170	230	290	351	411	471	532	593	654	715	777	838	900	962	50
51	51	111	171	231	291	352	412	472	533	594	655	716	778	839	901	963	51
52	52	112	172	232	292	353	413	473	534	595	656	717	779	840	902	964	52
53	53	113	173	233	293	354	414	474	535	596	657	718	780	841	903	965	53
54	54	114	174	234	294	355	415	476	536	597	658	719	781	842	904	966	54
55	55	115	175	235	295	356	416	477	537	598	659	720	782	843	905	968	55
56	56	116	176	236	296	357	417	478	538	599	660	721	783	844	906	969	56
57	57	117	177	237	297	358	418	479	539	600	661	722	784	845	907	970	57
58	58	118	178	238	298	359	419	480	540	601	662	723	785	846	908	971	58
59	59	119	179	239	299	360	420	481	541	602	663	724	786	847	909	972	59
′	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	′

MERIDIONAL PARTS.

′	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	′
0	973	1035	1098	1161	1225	1289	1354	1419	1484	1550	1616	1684	1751	1819	1888	0
1	974	1036	1099	1163	1226	1290	1355	1420	1485	1551	1618	1685	1752	1821	1890	1
2	975	1037	1100	1164	1227	1291	1356	1421	1486	1552	1619	1686	1753	1822	1891	2
3	976	1038	1101	1165	1228	1292	1357	1422	1487	1553	1620	1687	1755	1823	1892	3
4	977	1039	1102	1166	1229	1293	1358	1423	1488	1554	1621	1688	1756	1824	1893	4
5	978	1041	1103	1167	1230	1295	1359	1424	1490	1556	1622	1689	1757	1825	1894	5
6	979	1042	1105	1168	1232	1296	1360	1425	1491	1557	1623	1690	1758	1826	1895	6
7	980	1043	1106	1169	1233	1297	1361	1426	1492	1558	1624	1691	1759	1827	1896	7
8	981	1044	1107	1170	1234	1298	1362	1427	1493	1559	1625	1693	1760	1829	1898	8
9	982	1045	1108	1171	1235	1299	1363	1428	1494	1560	1626	1694	1761	1830	1899	9
10	983	1046	1109	1172	1236	1300	1364	1430	1495	1561	1628	1695	1762	1831	1900	10
11	984	1047	1110	1173	1237	1301	1366	1431	1496	1562	1629	1696	1764	1832	1901	11
12	985	1048	1111	1174	1238	1302	1367	1432	1497	1563	1630	1697	1765	1833	1902	12
13	986	1049	1112	1175	1239	1303	1368	1433	1498	1564	1631	1698	1766	1834	1903	13
14	987	1050	1113	1176	1240	1304	1369	1434	1499	1565	1632	1699	1767	1835	1905	14
15	988	1051	1114	1177	1241	1305	1370	1435	1500	1567	1633	1700	1768	1837	1906	15
16	989	1052	1115	1178	1242	1306	1371	1436	1502	1568	1634	1701	1769	1838	1907	16
17	990	1053	1116	1179	1243	1307	1372	1437	1503	1569	1635	1703	1770	1839	1908	17
18	991	1054	1117	1181	1244	1308	1373	1438	1504	1570	1637	1704	1772	1840	1909	18
19	993	1055	1118	1182	1245	1310	1374	1439	1505	1571	1638	1705	1773	1841	1910	19
20	994	1056	1119	1183	1246	1311	1375	1440	1506	1572	1639	1706	1774	1842	1912	20
21	995	1057	1120	1184	1248	1312	1376	1441	1507	1573	1640	1707	1775	1843	1913	21
22	996	1058	1121	1185	1249	1313	1377	1443	1508	1574	1641	1708	1776	1845	1914	22
23	997	1059	1122	1186	1250	1314	1379	1444	1509	1575	1642	1709	1777	1846	1915	23
24	998	1060	1123	1187	1251	1315	1380	1445	1510	1577	1643	1711	1778	1847	1916	24
25	999	1061	1125	1188	1252	1316	1381	1446	1511	1578	1644	1712	1780	1848	1917	25
26	1000	1063	1126	1189	1253	1317	1382	1447	1513	1579	1645	1713	1781	1849	1918	26
27	1001	1064	1127	1190	1254	1318	1383	1448	1514	1580	1647	1714	1782	1850	1920	27
28	1002	1065	1128	1191	1255	1319	1384	1449	1515	1581	1648	1715	1783	1852	1921	28
29	1003	1066	1129	1192	1256	1320	1385	1450	1516	1582	1649	1716	1784	1853	1922	29
30	1004	1067	1130	1193	1257	1321	1386	1451	1517	1583	1650	1717	1785	1854	1923	30
31	1005	1068	1131	1194	1258	1322	1387	1452	1518	1584	1651	1718	1786	1855	1924	31
32	1006	1069	1132	1195	1259	1324	1388	1453	1519	1585	1652	1720	1787	1856	1925	32
33	1007	1070	1133	1196	1260	1325	1389	1455	1520	1586	1653	1721	1789	1857	1927	33
34	1008	1071	1134	1198	1261	1326	1390	1456	1521	1588	1654	1722	1790	1858	1928	34
35	1009	1072	1135	1199	1262	1327	1392	1457	1522	1589	1656	1723	1791	1860	1929	35
36	1010	1073	1136	1200	1264	1328	1393	1458	1524	1590	1657	1724	1792	1861	1930	36
37	1011	1074	1137	1201	1265	1329	1394	1459	1525	1591	1658	1725	1793	1862	1931	37
38	1012	1075	1138	1202	1266	1330	1395	1460	1526	1592	1659	1726	1794	1863	1932	38
39	1013	1076	1139	1203	1267	1331	1396	1461	1527	1593	1660	1727	1795	1864	1934	39
40	1014	1077	1140	1204	1268	1332	1397	1462	1528	1594	1661	1729	1797	1865	1935	40
41	1015	1078	1141	1205	1269	1333	1398	1463	1529	1595	1662	1730	1798	1866	1936	41
42	1016	1079	1142	1206	1270	1334	1399	1464	1530	1596	1663	1731	1799	1868	1937	42
43	1018	1080	1144	1207	1271	1335	1400	1465	1531	1598	1664	1732	1800	1869	1938	43
44	1019	1081	1145	1208	1272	1336	1401	1467	1532	1599	1666	1733	1801	1870	1939	44
45	1020	1082	1146	1209	1273	1338	1402	1468	1533	1600	1667	1734	1802	1871	1941	45
46	1021	1084	1147	1210	1274	1339	1403	1469	1535	1601	1668	1735	1803	1872	1942	46
47	1022	1085	1148	1211	1275	1340	1405	1470	1536	1602	1669	1736	1805	1873	1943	47
48	1023	1086	1149	1212	1276	1341	1406	1471	1537	1603	1670	1738	1806	1875	1944	48
49	1024	1087	1150	1213	1277	1342	1407	1472	1538	1604	1671	1739	1807	1876	1945	49
50	1025	1088	1151	1215	1278	1343	1408	1473	1539	1605	1672	1740	1808	1877	1946	50
51	1026	1089	1152	1216	1280	1344	1409	1474	1540	1606	1673	1741	1809	1878	1948	51
52	1027	1090	1153	1217	1281	1345	1410	1475	1541	1608	1675	1742	1810	1879	1949	52
53	1028	1091	1154	1218	1282	1346	1411	1476	1542	1609	1676	1743	1811	1880	1950	53
54	1029	1092	1155	1219	1283	1347	1412	1477	1543	1610	1677	1744	1813	1881	1951	54
55	1030	1093	1156	1220	1284	1348	1413	1479	1544	1611	1678	1746	1814	1883	1952	55
56	1031	1094	1157	1221	1285	1349	1414	1480	1546	1612	1679	1747	1815	1884	1953	56
57	1032	1095	1158	1222	1286	1350	1415	1481	1547	1613	1680	1748	1816	1885	1955	57
58	1033	1096	1159	1223	1287	1352	1416	1482	1548	1614	1681	1749	1817	1886	1956	58
59	1034	1097	1160	1224	1288	1353	1418	1483	1549	1615	1682	1750	1818	1887	1957	59
′	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	′

MERIDIONAL PARTS

′	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	44°	45°	′
0	1958	2028	2100	2171	2244	2318	2393	2468	2545	2623	2702	2782	2863	2946	3030	0
1	1959	2030	2101	2173	2246	2319	2394	2470	2546	2624	2703	2783	2864	2947	3031	1
2	1960	2031	2102	2174	2247	2320	2395	2471	2548	2625	2704	2784	2866	2949	3033	2
3	1962	2032	2103	2175	2248	2322	2396	2472	2549	2627	2706	2786	2867	2950	3034	3
4	1963	2033	2104	2176	2249	2323	2398	2473	2550	2628	2707	2787	2869	2951	3036	4
5	1964	2034	2105	2178	2250	2324	2399	2475	2551	2629	2708	2788	2870	2953	3037	5
6	1965	2035	2107	2179	2252	2325	2400	2476	2553	2631	2710	2790	2871	2954	3038	6
7	1966	2037	2108	2180	2253	2327	2401	2477	2554	2632	2711	2791	2873	2956	3040	7
8	1967	2038	2109	2181	2254	2328	2403	2478	2555	2633	2712	2792	2874	2957	3041	8
9	1969	2039	2110	2182	2255	2329	2404	2480	2557	2634	2714	2794	2875	2958	3043	9
10	1970	2040	2111	2184	2257	2330	2405	2481	2558	2636	2715	2795	2877	2960	3044	10
11	1971	2041	2113	2185	2258	2332	2406	2482	2559	2637	2716	2797	2878	2961	3046	11
12	1972	2043	2114	2186	2259	2333	2408	2484	2560	2638	2718	2798	2880	2963	3047	12
13	1973	2044	2115	2187	2260	2334	2409	2485	2562	2640	2719	2799	2881	2964	3048	13
14	1974	2045	2116	2188	2261	2335	2410	2486	2563	2641	2720	2801	2882	2965	3050	14
15	1976	2046	2117	2190	2263	2337	2411	2487	2564	2642	2722	2802	2884	2967	3051	15
16	1977	2047	2119	2191	2264	2338	2413	2489	2566	2644	2723	2803	2885	2968	3053	16
17	1978	2048	2120	2192	2265	2339	2414	2490	2567	2645	2724	2805	2886	2970	3054	17
18	1979	2050	2121	2193	2266	2340	2415	2491	2568	2646	2726	2806	2888	2971	3055	18
19	1980	2051	2122	2194	2268	2342	2416	2492	2569	2648	2727	2807	2889	2972	3057	19
20	1981	2052	2123	2196	2269	2343	2418	2494	2571	2649	2728	2809	2891	2974	3058	20
21	1983	2053	2125	2197	2270	2344	2419	2495	2572	2650	2729	2810	2892	2975	3060	21
22	1984	2054	2126	2198	2271	2345	2420	2496	2573	2651	2731	2811	2893	2976	3061	22
23	1985	2056	2127	2199	2272	2346	2422	2498	2575	2653	2732	2813	2895	2978	3063	23
24	1986	2057	2128	2200	2274	2348	2423	2499	2576	2654	2733	2814	2896	2979	3064	24
25	1987	2058	2129	2202	2275	2349	2424	2500	2577	2655	2735	2815	2897	2981	3065	25
26	1988	2059	2131	2203	2276	2350	2425	2501	2578	2657	2736	2817	2899	2982	3067	26
27	1990	2060	2132	2204	2277	2351	2427	2503	2580	2658	2737	2818	2900	2983	3068	27
28	1991	2061	2133	2205	2279	2353	2428	2504	2581	2659	2739	2820	2902	2985	3070	28
29	1992	2063	2134	2207	2280	2354	2429	2505	2582	2661	2740	2821	2903	2986	3071	29
30	1993	2064	2135	2208	2281	2355	2430	2506	2584	2662	2742	2822	2904	2988	3073	30
31	1994	2065	2137	2209	2282	2356	2432	2508	2585	2663	2743	2824	2906	2989	3074	31
32	1995	2066	2138	2210	2283	2358	2433	2509	2586	2665	2744	2825	2907	2991	3075	32
33	1997	2067	2139	2211	2285	2359	2434	2510	2588	2666	2746	2826	2908	2992	3077	33
34	1998	2069	2140	2213	2286	2360	2435	2512	2589	2667	2747	2828	2910	2993	3078	34
35	1999	2070	2141	2214	2287	2361	2437	2513	2590	2669	2748	2829	2911	2995	3080	35
36	2000	2071	2143	2215	2288	2363	2438	2514	2591	2670	2750	2830	2913	2996	3081	36
37	2001	2072	2144	2216	2290	2364	2439	2515	2593	2671	2751	2832	2914	2998	3083	37
38	2002	2073	2145	2217	2291	2365	2440	2517	2594	2673	2752	2833	2915	2999	3084	38
39	2004	2075	2146	2219	2292	2366	2442	2518	2595	2674	2754	2834	2917	3000	3085	39
40	2005	2076	2147	2220	2293	2368	2443	2519	2597	2675	2755	2836	2918	3002	3087	40
41	2006	2077	2149	2221	2295	2369	2444	2521	2598	2676	2756	2837	2919	3003	3088	41
42	2007	2078	2150	2222	2296	2370	2445	2522	2599	2678	2758	2839	2921	3005	3090	42
43	2008	2079	2151	2224	2297	2371	2447	2523	2601	2679	2759	2840	2922	3006	3091	43
44	2010	2080	2152	2225	2298	2373	2448	2524	2602	2680	2760	2841	2924	3007	3093	44
45	2011	2082	2153	2226	2299	2374	2449	2526	2603	2682	2762	2843	2925	3009	3094	45
46	2012	2083	2155	2227	2301	2375	2451	2527	2604	2683	2763	2844	2926	3010	3095	46
47	2013	2084	2156	2228	2302	2376	2452	2528	2606	2684	2764	2845	2928	3012	3097	47
48	2014	2085	2157	2230	2303	2378	2453	2530	2607	2686	2766	2847	2929	3013	3098	48
49	2015	2086	2158	2231	2304	2379	2454	2531	2608	2687	2767	2848	2931	3014	3100	49
50	2017	2088	2159	2232	2306	2380	2456	2532	2610	2688	2768	2849	2932	3016	3101	50
51	2018	2089	2161	2233	2307	2381	2457	2533	2611	2690	2770	2851	2933	3017	3103	51
52	2019	2090	2162	2235	2308	2383	2458	2535	2612	2691	2771	2852	2935	3019	3104	52
53	2020	2091	2163	2236	2309	2384	2459	2536	2614	2692	2772	2854	2936	3020	3105	53
54	2021	2092	2164	2237	2311	2385	2461	2537	2615	2694	2774	2855	2937	3021	3107	54
55	2022	2094	2165	2238	2312	2386	2462	2538	2616	2695	2775	2856	2939	3023	3108	55
56	2024	2095	2167	2239	2313	2388	2463	2540	2617	2696	2776	2858	2940	3024	3110	56
57	2025	2096	2168	2241	2314	2389	2464	2541	2619	2698	2778	2859	2942	3026	3111	57
58	2026	2097	2169	2242	2316	2390	2466	2542	2620	2699	2779	2860	2943	3027	3113	58
59	2027	2098	2170	2243	2317	2391	2467	2544	2621	2700	2780	2862	2944	3029	3114	59
′	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	44°	45°	′

MERIDIONAL PARTS.

′	46°	47°	48°	49°	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	′
0	3116	3203	3292	3382	3474	3569	3665	3764	3865	3968	4074	4183	4294	4409	4527	0
1	3117	3204	3293	3384	3476	3570	3667	3765	3866	3970	4076	4184	4296	4411	4529	1
2	3118	3206	3295	3385	3478	3572	3668	3767	3868	3971	4077	4186	4298	4413	4531	2
3	3120	3207	3296	3387	3479	3574	3670	3769	3870	3973	4079	4188	4300	4415	4533	3
4	3121	3209	3298	3388	3481	3575	3672	3770	3871	3975	4081	4190	4302	4417	4535	4
5	3123	3210	3299	3390	3482	3577	3673	3772	3873	3977	4083	4192	4304	4419	4537	5
6	3124	3212	3301	3391	3484	3578	3675	3774	3875	3978	4085	4194	4306	4421	4539	6
7	3126	3213	3302	3393	3485	3580	3677	3775	3877	3980	4086	4195	4308	4423	4541	7
8	3127	3214	3303	3394	3487	3582	3678	3777	3878	3982	4088	4197	4309	4425	4543	8
9	3129	3216	3305	3396	3488	3583	3680	3779	3880	3984	4090	4199	4311	4427	4545	9
10	3130	3217	3306	3397	3490	3585	3681	3780	3882	3985	4092	4201	4313	4429	4547	10
11	3131	3219	3308	3399	3492	3586	3683	3782	3883	3987	4094	4203	4315	4431	4549	11
12	3133	3220	3309	3400	3493	3588	3685	3784	3885	3989	4095	4205	4317	4433	4551	12
13	3134	3222	3311	3402	3495	3590	3686	3785	3887	3991	4097	4207	4319	4434	4553	13
14	3136	3223	3312	3403	3496	3591	3688	3787	3889	3992	4099	4208	4321	4436	4555	14
15	3137	3225	3314	3405	3498	3593	3690	3789	3890	3994	4101	4210	4323	4438	4557	15
16	3139	3226	3316	3407	3499	3594	3691	3790	3892	3996	4103	4212	4325	4440	4559	16
17	31[illegible]	3228	3317	3408	3501	3596	3693	3792	3894	3998	4104	4214	4327	4442	4562	17
18	3142	3229	3319	3410	3503	3598	3695	3794	3895	3999	4106	4216	4328	4444	4564	18
19	3143	3231	3320	3411	3504	3599	3696	3795	3897	4001	4108	4218	4330	4446	4566	19
20	3144	3232	3322	3413	3506	3601	3698	3797	3899	4003	4110	4220	4332	4448	4568	20
21	3146	3234	3323	3414	3507	3602	3699	3799	3901	4005	4112	4221	4334	4450	4570	21
22	3147	3235	3325	3416	3509	3604	3701	3800	3902	4006	4113	4223	4336	4452	4572	22
23	3149	3237	3326	3417	3510	3606	3703	3802	3904	4008	4115	4225	4338	4454	4574	23
24	3150	3238	3328	3419	3512	3607	3704	3804	3906	4010	4117	4227	4340	4456	4576	24
25	3152	3240	3329	3420	3514	3609	3706	3806	3907	4012	4119	4229	4342	4458	4578	25
26	3153	3241	3331	3422	3515	3610	3708	3807	3909	4014	4121	4231	4344	4460	4580	26
27	3155	3242	3332	3423	3517	3612	3709	3809	3911	4015	4122	4232	4346	4462	4582	27
28	3156	3244	3334	3425	3518	3614	3711	3811	3913	4017	4124	4234	4347	4464	4584	28
29	3157	3245	3335	3427	3520	3615	3713	3812	3914	4019	4126	4236	4349	4466	4586	29
30	3159	3247	3337	3428	3521	3617	3714	3814	3916	4021	4128	4238	4351	4468	4588	30
31	3160	3248	3338	3430	3523	3618	3716	3816	3918	4022	4130	4240	4353	4470	4590	31
32	3162	3250	3340	3431	3525	3620	3717	3817	3919	4024	4132	4242	4355	4472	4592	32
33	3163	3251	3341	3433	3526	3622	3719	3819	3921	4026	4133	4244	4357	4474	4594	33
34	3165	3253	3343	3434	3528	3623	3721	3821	3923	4028	4135	4246	4359	4476	4596	34
35	3166	3254	3344	3436	3529	3625	3722	3822	3925	4029	4137	4247	4361	4478	4598	35
36	3168	3256	3346	3437	3531	3626	3724	3824	3926	4031	4139	4249	4363	4480	4600	36
37	3169	3257	3347	3439	3532	3628	3726	3826	3928	4033	4141	4251	4365	4482	4602	37
38	3171	3259	3349	3440	3534	3630	3727	3827	3930	4035	4142	4253	4367	4484	4604	38
39	3172	3260	3350	3442	3536	3631	3729	3829	3932	4037	4144	4255	4369	4486	4606	39
40	3173	3262	3352	3443	3537	3633	3731	3831	3933	4038	4146	4257	4370	4488	4608	40
41	3175	3263	3353	3445	3539	3634	3732	3832	3935	4040	4148	4259	4372	4490	4610	41
42	3176	3265	3355	3447	3540	3636	3734	3834	3937	4042	4150	4260	4374	4492	4612	42
43	3178	3266	3356	3448	3542	3638	3736	3836	3938	4044	4152	4262	4376	4494	4614	43
44	3179	3268	3358	3450	3543	3639	3737	3838	3940	4045	4153	4264	4378	4495	4616	44
45	3181	3269	3359	3451	3545	3641	3739	3839	3942	4047	4155	4266	4380	4497	4618	45
46	3182	3271	3361	3453	3547	3643	3741	3841	3944	4049	4157	4268	4382	4499	4620	46
47	3184	3272	3362	3454	3548	3644	3742	3843	3945	4051	4159	4270	4384	4501	4623	47
48	3185	3274	3364	3456	3550	3646	3744	3844	3947	4052	4161	4272	4386	4503	4625	48
49	3187	3275	3365	3457	3551	3647	3746	3846	3949	4054	4162	4274	4388	4505	4627	49
50	3188	3277	3367	3459	3553	3649	3747	3848	3951	4056	4164	4275	4390	4507	4629	50
51	3190	3278	3368	3460	3555	3651	3749	3849	3952	4058	4166	4277	4392	4509	4631	51
52	3191	3280	3370	3462	3556	3652	3750	3851	3954	4060	4168	4279	4394	4511	4633	52
53	3192	3281	3371	3464	3558	3654	3752	3853	3956	4061	4170	4281	4396	4513	4635	53
54	3194	3283	3373	3465	3559	3655	3754	3854	3958	4063	4172	4283	4398	4515	4637	54
55	3195	3284	3374	3467	3561	3657	3755	3856	3959	4065	4173	4285	4399	4517	4639	55
56	3197	3286	3376	3468	3562	3659	3757	3858	3961	4067	4175	4287	4401	4519	4641	56
57	3198	3287	3378	3470	3564	3660	3759	3860	3963	4069	4177	4289	4403	4521	4643	57
58	3200	3289	3379	3471	3566	3662	3760	3861	3964	4070	4179	4291	4405	4523	4645	58
59	3201	3290	3381	3473	3567	3664	3762	3863	3966	4072	4181	4292	4407	4525	4647	59
′	46°	47°	48°	49°	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	′

′	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	71°	72°	73°	74°	75°	′
0	4649	4775	4905	5039	5179	5324	5474	5631	5795	5966	6146	6335	6534	6746	6970	0
1	4651	4777	4907	5042	5181	5326	5477	5633	5797	5969	6149	6338	6538	6749	6974	1
2	4653	4779	4909	5044	5184	5328	5479	5636	5800	5972	6152	6341	6541	6753	6978	2
3	4655	4781	4912	5046	5186	5331	5482	5639	5803	5975	6155	6345	6545	6757	6982	3
4	4657	4784	4914	5049	5188	5333	5484	5642	5806	5978	6158	6348	6548	6760	6986	4
5	4660	4786	4916	5051	5191	5336	5487	5644	5809	5981	6161	6351	6552	6764	6990	5
6	4662	4788	4918	5053	5193	5338	5489	5647	5811	5984	6164	6354	6555	6768	6994	6
7	4664	4790	4920	5055	5195	5341	5492	5650	5814	5986	6167	6358	6558	6771	6997	7
8	4666	4792	4923	5058	5198	5343	5495	5652	5817	5989	6170	6361	6562	6775	7001	8
9	4668	4794	4925	5060	5200	5346	5497	5655	5820	5992	6173	6364	6565	6779	7005	9
10	4670	4796	4927	5062	5203	5348	5500	5658	5823	5995	6177	6367	6569	6782	7009	10
11	4672	4798	4929	5065	5205	5351	5502	5660	5825	5998	6180	6371	6572	6786	7013	11
12	4674	4801	4931	5067	5207	5353	5505	5663	5828	6001	6183	6374	6576	6790	7017	12
13	4676	4803	4934	5069	5210	5356	5507	5666	5831	6004	6186	6377	6579	6793	7021	13
14	4678	4805	4936	5071	5212	5358	5510	5668	5834	6007	6189	6380	6583	6797	7025	14
15	4680	4807	4938	5074	5214	5361	5513	5671	5837	6010	6192	6384	6586	6801	7029	15
16	4682	4809	4940	5076	5217	5363	5515	5674	5839	6013	6195	6387	6590	6804	7033	16
17	4684	4811	4943	5078	5219	5366	5518	5676	5842	6016	6198	6390	6593	6808	7037	17
18	4687	4814	4945	5081	5222	5368	5520	5679	5845	6019	6201	6394	6597	6812	7041	18
19	4689	4816	4947	5083	5224	5371	5523	5682	5848	6022	6205	6397	6600	6815	7045	19
20	4691	4818	4949	5085	5226	5373	5526	5685	5851	6025	6208	6400	6603	6819	7048	20
21	4693	4820	4951	5088	5229	5376	5528	5687	5854	6028	6211	6403	6607	6823	7052	21
22	4695	4822	4954	5090	5231	5378	5531	5690	5856	6031	6214	6407	6610	6826	7056	22
23	4697	4824	4956	5092	5234	5380	5533	5693	5859	6034	6217	6410	6614	6830	7060	23
24	4699	4826	4958	5095	5236	5383	5536	5695	5862	6037	6220	6413	6617	6834	7064	24
25	4701	4829	4960	5097	5238	5385	5539	5698	5865	6040	6223	6417	6621	6838	7068	25
26	4703	4831	4963	5099	5241	5388	5541	5701	5868	6043	6226	6420	6624	6841	7072	26
27	4705	4833	4965	5102	5243	5390	5544	5704	5871	6046	6230	6423	6628	6845	7076	27
28	4707	4835	4967	5104	5246	5393	5546	5706	5874	6049	6233	6427	6631	6849	7080	28
29	4710	4837	4969	5106	5248	5395	5549	5709	5876	6052	6236	6430	6635	6853	7084	29
30	4712	4839	4972	5108	5250	5398	5552	5712	5879	6055	6239	6433	6639	6856	7088	30
31	4714	4842	4974	5111	5253	5401	5554	5715	5882	6058	6242	6437	6642	6860	7092	31
32	4716	4844	4976	5113	5255	5403	5557	5717	5885	6061	6245	6440	6646	6864	7096	32
33	4718	4846	4978	5115	5258	5406	5559	5720	5888	6064	6249	6443	6649	6868	7100	33
34	4720	4848	4981	5118	5260	5408	5562	5723	5891	6067	6252	6447	6653	6871	7104	34
35	4722	4850	4983	5120	5263	5411	5565	5725	5894	6070	6255	6450	6656	6875	7108	35
36	4724	4852	4985	5122	5265	5413	5567	5728	5896	6073	6258	6453	6660	6879	7112	36
37	4726	4855	4987	5125	5267	5416	5570	5731	5899	6076	6261	6457	6663	6883	7116	37
38	4728	4857	4990	5127	5270	5418	5573	5734	5902	6079	6264	6460	6667	6886	7120	38
39	4731	4859	4992	5129	5272	5421	5575	5736	5905	6082	6268	6463	6670	6890	7124	39
40	4733	4861	4994	5132	5275	5423	5578	5739	5908	6085	6271	6467	6674	6894	7128	40
41	4735	4863	4996	5134	5277	5426	5580	5742	5911	6088	6274	6470	6677	6898	7132	41
42	4737	4865	4999	5136	5280	5428	5583	5745	5914	6091	6277	6473	6681	6901	7136	42
43	4739	4868	5001	5139	5282	5431	5586	5747	5917	6094	6280	6477	6685	6905	7140	43
44	4741	4870	5003	5141	5284	5433	5588	5750	5919	6097	6283	6480	6688	6909	7145	44
45	4743	4872	5005	5143	5287	5436	5591	5753	5922	6100	6287	6483	6692	6913	7149	45
46	4745	4874	5008	5146	5289	5438	5594	5756	5925	6103	6290	6487	6695	6917	7153	46
47	4747	4876	5010	5148	5292	5441	5596	5758	5928	6106	6293	6490	6699	6920	7157	47
48	4750	4879	5012	5151	5294	5443	5599	5761	5931	6109	6296	6494	6702	6924	7161	48
49	4752	4881	5014	5153	5297	5446	5602	5764	5934	6112	6299	6497	6706	6928	7165	49
50	4754	4883	5017	5155	5299	5448	5604	5767	5937	6115	6303	6500	6710	6932	7169	50
51	4756	4885	5019	5158	5301	5451	5607	5770	5940	6118	6306	6504	6713	6936	7173	51
52	4758	4887	5021	5160	5304	5454	5610	5772	5943	6121	6309	6507	6717	6940	7177	52
53	4760	4890	5023	5162	5306	5456	5612	5775	5946	6124	6312	6511	6720	6943	7181	53
54	4762	4892	5026	5165	5309	5459	5615	5778	5948	6127	6315	6514	6724	6947	7185	54
55	4764	4894	5028	5167	5311	5461	5617	5781	5951	6130	6319	6517	6728	6951	7189	55
56	4766	4896	5030	5169	5314	5464	5620	5783	5954	6133	6322	6521	6731	6955	7194	56
57	4769	4898	5033	5172	5316	5466	5623	5786	5957	6136	6325	6524	6735	6959	7198	57
58	4771	4901	5035	5174	5319	5469	5625	5789	5960	6140	6328	6528	6738	6963	7202	58
59	4773	4903	5037	5176	5321	5471	5628	5792	5963	6143	6332	6531	6742	6966	7206	59
′	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	71°	72°	73°	74°	75°	′

MERIDIONAL PARTS.

′	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°	′
0	7210	7467	7745	8046	8375	8739	9145	9606	10137	10765	11533	12522	1391[illegible]	16300	0
1	7214	7472	7749	8051	8381	8745	9153	9614	10147	10776	11547	12541	13945	16357	1
2	7218	7476	7754	8056	8387	8752	9160	9622	10156	10788	11561	12561	13974	16416	2
3	7222	7481	7759	8061	8393	8758	9167	9631	10166	10799	11576	12580	14004	16476	3
4	7227	7485	7764	8067	8398	8765	9174	9639	10175	10811	11590	12599	14033	16537	4
5	7231	7490	7769	8072	8404	8771	9182	9647	10185	10823	11605	12619	14063	16599	5
6	7235	7494	7774	8077	8410	8778	9189	9655	10195	10834	11620	12639	14093	16662	6
7	7239	7498	7778	8083	8416	8784	9196	9664	10205	10846	11634	12659	14123	16726	7
8	7243	7503	7783	8088	8422	8791	9203	9672	10214	10858	11649	12678	14154	16792	8
9	7247	7507	7788	8093	8427	8797	9211	9680	10224	10870	11664	12699	14185	16858	9
10	7252	7512	7793	8099	8433	8804	9218	9689	10234	10881	11679	12719	14216	16926	10
11	7256	7516	7798	8104	8439	8810	9225	9697	10244	10893	11694	12739	14247	16996	11
12	7260	7521	7803	8109	8445	8817	9233	9706	10254	10905	11709	12759	14279	17067	12
13	7264	7525	7808	8115	8451	8823	9240	9714	10264	10917	11724	12780	14311	1714[illegible]	13
14	7268	7530	7813	8120	8457	8830	9248	9723	10274	10929	11739	12801	14343	17213	14
15	7273	7535	7817	8125	8463	8836	9255	9731	10285	10941	11755	12821	14376	17289	15
16	7277	7539	7822	8131	8469	8843	9262	9740	10294	10953	11770	12842	1440[illegible]	17366	16
17	7281	7544	7827	8136	8474	8849	9270	9748	10304	10965	11785	12863	14442	1744[illegible]	17
18	7285	7548	7832	8141	8480	8856	9277	9757	10314	10978	11801	1288[illegible]	14475	17526	18
19	7289	7553	7837	8147	8486	8863	9285	9765	10324	10990	11816	12906	14509	17609	19
20	7294	7557	7842	8152	8492	8869	9292	9774	10334	11002	11832	12927	14543	1769[illegible]	20
21	7298	7562	7847	8158	8498	8876	9300	9783	10344	11014	11848	12949	14578	17781	21
22	7302	7566	7852	8163	8504	8883	9307	9791	10354	11027	11863	1297[illegible]	14613	17870	22
23	7306	7571	7857	8168	8510	8889	9315	9800	10364	11039	11879	12992	14648	17962	23
24	7311	7576	7862	8174	8516	8896	9322	9809	10374	11052	11895	13014	14684	18056	24
25	7315	7580	7867	8179	8522	8903	9330	9817	10385	11064	11911	13037	14720	18153	25
26	7319	7585	7872	8185	8528	8909	9337	9826	10395	11077	11927	13059	14756	18252	26
27	7323	7589	7877	8190	8534	8916	9345	9835	10405	11089	11943	13081	14793	18355	27
28	7328	7594	7882	8196	8540	8923	9353	9844	10416	11102	11959	13104	14830	18461	28
29	7332	7599	7887	8201	8546	8930	9360	9852	10426	11115	11976	13126	14868	18570	29
30	7336	7603	7892	8207	8552	8936	9368	9861	10437	11127	11992	13149	14906	1868[illegible]	30
31	7341	7608	7897	8212	8558	8943	9376	9870	10447	11140	12008	13172	14944	18799	31
32	7345	7612	7902	8218	8565	8950	9383	9879	10457	11153	12025	13195	14983	18920	32
33	7349	7617	7907	8223	8571	8957	9391	9888	10468	11166	12041	13219	15022	19045	33
34	7353	7622	7912	8229	8577	8963	9399	9897	10478	11179	12058	13242	15062	19174	34
35	7358	7626	7917	8234	8583	8970	9407	9906	10489	11192	12075	13266	15102	19309	35
36	7362	7631	7922	8240	8589	8977	9414	9915	10500	11205	12092	13290	15143	1944[illegible]	36
37	7366	7636	7927	8245	8595	8984	9422	9924	10510	11218	12109	13314	15184	19596	37
38	7371	7640	7932	8251	8601	8991	9430	9933	10521	11231	1212[illegible]	13338	15226	19749	38
39	7375	7645	7937	8256	8607	8998	9438	9942	10532	11244	12143	13362	15268	1990[illegible]	39
40	7379	7650	7942	8262	8614	9005	9445	9951	10543	11257	12160	1338[illegible]	15311	20076	40
41	7384	7654	7948	8267	8620	9012	9453	9960	10553	11270	12177	13411	15354	2025[illegible]	41
42	7388	7659	7953	8273	8626	9018	9461	9969	10564	11284	12194	13436	15398	20439	42
43	7392	7664	7958	8279	8632	9025	9469	9978	10575	11297	12212	13461	15442	20635	43
44	7397	7668	7963	8284	8638	9032	9477	9987	10586	11310	12229	13486	15487	20843	44
45	7401	7673	7968	8290	8644	9039	9485	9996	10597	11324	12247	13512	15533	21065	45
46	7406	7678	7973	8295	8651	9046	9493	10005	10608	1133[illegible]	12265	13537	15579	21303	46
47	7410	7683	7978	8301	8657	9053	9501	10015	10619	11351	12282	13563	15625	21557	47
48	7414	7687	7983	8307	8663	9060	9509	10024	10630	11365	12300	13589	15673	21832	48
49	7419	7692	7989	8312	8669	9067	9517	10033	10641	11378	12318	13615	15721	22132	49
50	7423	7697	7994	8318	8676	9074	9525	10043	10652	11392	12336	13641	15770	22459	50
51	7427	7702	7999	8324	8682	9081	9533	10052	10663	11406	12354	13668	15819	22821	51
52	7432	7706	8004	8329	8688	9088	9541	10061	10674	11420	12373	1369[illegible]	15869	23226	52
53	7436	7711	8009	8335	8695	9096	9549	10071	10685	11434	12391	13721	15920	23685	53
54	7441	7716	8014	8341	8701	9103	9557	10080	10696	11448	12409	13749	15972	24215	54
55	7445	7721	8020	8347	8707	9110	9565	10089	10708	11462	12428	13776	16025	24842	55
56	7449	7725	8025	8352	8714	9117	9573	10099	10719	11476	1244[illegible]	13804	16078	25609	56
57	7454	7730	8030	8358	8720	9124	9581	10108	10730	11490	12465	13832	16132	26598	57
58	7458	7735	8035	8364	8726	9131	9589	10118	10742	11504	12484	13860	16187	27992	58
59	7463	7740	8040	8369	8733	9138	9598	10127	10753	11518	12503	13888	16243	30375	59
′	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°	′

ASTRONOMICAL REFRACTIONS, when the Barometer is at 30.0 English Inches, and Fahrenheit's Thermometer at 55°, or when the Barometer is at 29.6, and Fahrenheit's Thermometer at 50°; with the SUN'S PARALLAX.

Parallax of the Sun in a Vertical Circle.		Altitude.	Zenith Distance.	Refraction for Barom. 30,0, Therm. 55°.		Variation for 9-10ths of an Inch of Barom.	Variation for 20° of Fahrenheit's Therm.	Altitude.	Zenith Distance	Refraction for Barom. 30.0, Therm. 55°.		Variation for 9-10ths of an Inch of Barom.	Variation for 20° of Fahrenheit's Therm.	Altitude.	Zenith Distance.	Refraction for Barom. 30.0, Therm. 55°.		Variation for 9-10ths of an Inch of Barom.	Variation for 20° of Fahrenheit's Therm.
Zenith Distance.	Sun's Parallax.																		
°	//	°	°	′	//	//	//	°	°	′	//	//	//	°	°	′	//	//	//
0	0.0	90	0	0	0.0	0.0	0.0	60	30	0	33.1	1.0	1.5	30	60	1	39.0	2.9	4.5
3	0.4	89	1	0	1.0	0.0	0.0	59	31	0	34.4	1.0	1.5	29	61	1	43.2	3.0	4.7
6	0.9	88	2	0	2.0	0.1	0.1	58	32	0	35.8	1.1	1.6	28	62	1	47.6	3.1	4.9
9	1.4	87	3	0	3.0	0.1	0.1	57	33	0	37.2	1.1	1.7	27	63	1	52.3	3.2	5.1
12	1.8	86	4	0	4.0	0.1	0.2	56	34	0	38.7	1.2	1.7	26	64	1	57.2	3.4	5.3
15	2.3	85	5	0	5.0	0.2	0.2	55	35	0	40.2	1.2	1.8	25	65	2	2.4	3.5	5.6
18	2.7	84	6	0	6.1	0.2	0.2	54	36	0	41.7	1.2	1.9	24	66	2	8.0	3.7	5.9
21	3.1	83	7	0	7.1	0.2	0.3	53	37	0	43.3	1.3	2.0	23	67	2	14.2	4.0	6.3
24	3.6	82	8	0	8.1	0.2	0.3	52	38	0	44.9	1.3	2.0	22	68	2	20.9	4.2	6.6
27	4.0	81	9	0	9.2	0.3	0.4	51	39	0	46.5	1.4	2.1	21	69	2	28.3	4.4	6.9
30	4.4	80	10	0	10.2	0.3	0.4	50	40	0	48.1	1.4	2.2	20	70	2	36.3	4.7	7.3
33	4.8	79	11	0	11.2	0.3	0.5	49	41	0	49.8	1.5	2.2	19	71	2	45.1	5.0	7.7
36	5.2	78	12	0	12.3	0.4	0.5	48	42	0	51.6	1.5	2.3	18	72	2	54.7	5.3	8.2
39	5.5	77	13	0	13.3	0.4	0.6	47	43	0	53.4	1.6	2.4	17	73	3	5.5	5.6	8.7
42	5.9	76	14	0	14.4	0.4	0.6	46	44	0	55.3	1.6	2.5	16	74	3	17.5	5.9	9.3
45	6.2	75	15	0	15.4	0.5	0.7	45	45	0	57.3	1.7	2.6	15	75	3	31.0	6.3	9.9
48	6.5	74	16	0	16.5	0.5	0.7	44	46	0	59.3	1.8	2.7	14	76	3	46.4	6.8	10.6
51	6.8	73	17	0	17.6	0.5	0.8	43	47	1	1.4	1.9	2.8	13	77	4	3.8	7.3	11.5
54	7.1	72	18	0	18.7	0.6	0.8	42	48	1	3.6	2.0	2.9	12	78	4	24.0	7.9	12.5
57	7.4	71	19	0	19.8	0.6	0.9	41	49	1	5.9	2.0	3.0	11	79	4	46.6	8.6	13.7
60	7.6	70	20	0	20.9	0.6	0.9	40	50	1	8.2	2.1	3.1	10	80	5	15.6	9.4	14.9
63	7.8	69	21	0	22.0	0.7	1.0	39	51	1	10.6	2.2	3.2	9	81	5	49.0	10.4	16.5
66	8.0	68	22	0	23.2	0.7	1.0	38	52	1	13.2	2.3	3.4	8	82	6	29.7	11.6	18.5
69	8.2	67	23	0	24.3	0.7	1.1	37	53	1	15.9	2.3	3.5	7	83	7	20.3	13.1	21.3
72	8.4	66	24	0	25.5	0.8	1.2	36	54	1	18.7	2.4	3.7	6	84	8	24.7	15.0	24.9
75	8.5	65	25	0	26.7	0.8	1.2	35	55	1	21.6	2.5	3.8	5	85	9	48.8	17.5	29.6
78	8.6	64	26	0	28.0	0.8	1.3	34	56	1	24.7	2.5	3.9	4	86	11	41.8		
81	8.7	63	27	0	29.2	0.9	1.3	33	57	1	28.0	2.6	4.1	3	87	14	18.4		
84	8.7	62	28	0	30.5	0.9	1.4	32	58	1	31.5	2.7	4.2	2	88	18	1.3		
87	8.8	61	29	0	31.8	1.0	1.4	31	59	1	35.2	2.8	4.3	1	89	23	21.4		
90	8.8	60	30	0	33.1	1.0	1.5	30	60	1	39.0	2.9	4.5	0	90	30	50.8	55.0	129.2

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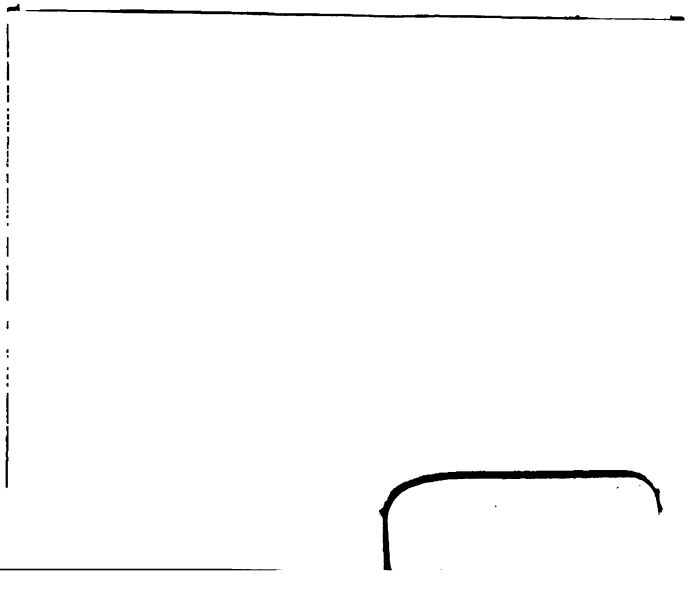

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